Designing and Planning a Comprehensive Investigation of Enlisted Attrition Across the First-Term Cycle

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14. ABSTRACT (Maximum 200 words):

The U.S. Army Research Institute for the Behavioral and Social Sciences is engaged in a broad-based attrition research program incorporating both longitudinal and concurrent research designs. In the longitudinal design, several measures (e.g., surveys, test instruments, and performance criteria) will be obtained from samples of the Fiscal Year 1999 accession cohort who will be tracked throughout the first-term life cycle. For the concurrent design, comparison data from various points along the first-term life cycle will be collected from earlier accession cohorts. This report outlines the overall sampling, data collection, and data analysis plans for the program.

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DESIGNING AND PLANNING A COMPREHENSIVE INVESTIGATION OF ENLISTED ATTRITION ACROSS THE FIRST-TERM CYCLE

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DESIGNING AND PLANNING A COMPREHENSIVE INVESTIGATION OF ENLISTED ATTRITION ACROSS THE FIRST-TERM LIFE CYCLE

EXECUTIVE SUMMARY

Research Requirement:

First-term enlisted attrition is a particular concern to the Army. It is expensive, and it disrupts both the lives of the people involved and the units those people end up leaving early. The Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs has sponsored a multiple-year effort to research the causes of first-term attrition and to determine how the Army can effectively reduce attrition rates.

Procedure:

This report outlines the first-term enlisted attrition study. That study centers on a longitudinal design that follows Fiscal Year 1999 accession cohort members throughout their first term. In addition to collection and analysis of routine Army personnel data, the research includes special survey data collection from a large sample of cohort members at entry into the Army, at graduation from Basic Combat Training, One-Station Unit Training, and Advanced Individual Training. Cohort members who leave the Army before the expiration of their initial term of service will be administered an exit survey. Finally, a large sample of cohort members will receive annual mail surveys throughout their first term.

Findings:

In preparing for this long-term study, researchers prepared sampling, data collection, and data analysis plans. A major challenge to the analysis team will be merging multiple databases and making sense of the extremely complicated analyses that will result.

Utilization of Findings:

This report should be useful to anyone requiring a brief overview of the research purpose and the designs intended to accomplish that purpose. At the same time, the report documents the sampling and preliminary data collection processes that have already taken place. Finally, it provides planning guidance for future data collection activities and for the analyses that will follow during the course of this research.

DESIGNING AND PLANNING A COMPREHENSIVE INVESTIGATION OF ENLISTED ATTRITION ACROSS THE FIRST-TERM LIFE CYCLE

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Introduction

In 1996, the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA M&RA) asked the Army Research Institute (ARI) to draft a broad-based proposal for carrying out a comprehensive, integrated research program examining the causes of first-term enlisted attrition from the Army. ARI proposed that factors influencing attrition should be examined across the entire first enlistment term, thus launching a five- to six-year program of research for investigating the multiple causes of attrition throughout the life cycle. The factors selected for study include person variables (e.g., abilities, expectations, values, and background), organizational variables (e.g., culture and climate within the Army), and extra-organizational variables (e.g., civilian employment rate, attitudes of society and significant others). When considered in combination, these factors determine the individual's "fit" within an organization and the likelihood that he or she will be successful in the Army.

In support of this long-term effort, ASA (M&RA) then sponsored Phase I of a research program modeled after ARI's broad-based proposal. The Phase I contract effort began in August 1997 and was completed in January 1998. The objective of that initial phase was to develop and assess a prototype database for tracking first-term attrition among those soldiers who entered the Army in fiscal year 1992 (the FY92 accession cohort). Such a database is a primary requirement for the broader effort, because there is no one database that tracks all cases of attrition within the Army. The results of Phase I established the methodology for developing comprehensive attrition databases for the research to be conducted in subsequent phases.

The present Research Report documents Phase II of the broad-based attrition research program. The objective of Phase II is to design and plan the overall five- to six-year attrition research effort. That plan should allow the Army to answer the following questions:

How can the Army best account for attrition across the phases of the first term of enlistment (e.g., initial entry training, initial operational assignment)?
- What person variables contribute to attrition at each phase?
- What are the effects of organizational conditions?
- What role do extra-organizational factors such as family status or employment opportunities play?
- Do different factors affect the attrition and retention of high and low performers?
- How do all these variables interact in a comprehensive model of soldier adaptation to the Army?

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How can the Army impact the factors that drive attrition rates?
- What strategies are likely to be effective for managing attrition at each phase of the first term of enlistment?
- How can attrition management models and strategies best take into account future Army requirements?

In the following sections of this report, we briefly describe the conceptual model that underlies the current research plan, address the issue of survey instrument development, and discuss the sampling and data collection process. We follow that discussion with an examination of data analysis issues that must be addressed in the research, and conclude with a timeline and a description of products that will result from the overall program.

Conceptual Model

Attrition (and its civilian counterpart, usually referred to as, "turnover") has been a popular subject of research for decades. This performance dimension has been popular for several reasons: It is a visible problem, whose effects are felt throughout the personnel pipeline; at first glance, it is a relatively simple measure; and it is costly. Over the years, research has focused on various factors thought to be related to attrition. Those factors have included individual background characteristics, organizational and situational factors, and extra-organizational or environmental factors.

Among the many individual background characteristics investigated have been such variables as age, sex, race, marital status, academic ability, moral character, geographic region of origin, and education credential. Far fewer military investigations have targeted organizational and situational variables, despite the fact that attrition rates vary widely between training locations, military occupational specialties, and units. Environmental factors such as family pressures or civilian economic opportunities have been studied even less. Within civilian populations, researchers have developed a theory that turnover (attrition) results from an incongruity between the organization and the individual, which leads to lower levels of individual or organization satisfaction, resulting in a person leaving the organization. This notion of the incompatibility or misfit between the individual and the organization is a major cause of turnover has been extensively reviewed within the civilian section under the rubric of "person-organization fit."

Taken together, these investigations contribute to the overall understanding of military attrition. However, they have not provided a comprehensive basis for answering today's questions about attrition and its causes—much less given the Army the ability to manage attrition in ways that minimize its negative impact on the personnel system and, ultimately, mission accomplishment. Most efforts have focused on only part of the issue (for example, relating race, sex, or education credential to attrition), without considering the inter-relationship of individual factors with organizational or extra-organizational factors, or even with other individual factors. The scant few more comprehensive investigations have usually been unable to follow a specific group of soldiers from

enlistment all the way through their first term. Instead—usually in the interests of time—they have either been limited to performing analyses that rely on whatever data happened to have been collected over time, or they have had to look across year groups to draw conclusions about what might happen to any specific year group. These "cross sectional" research designs are less likely to provide definitive answers than are "longitudinal" designs that follow one group of soldiers over time. Finally, very few investigations have looked directly at organizational or extra-organizational factors.

ARI's broad-based attrition research is planned to overcome many of the limitations of previous research. Essential to the plan is a longitudinal design that follows soldiers throughout their first term. Similarly, the plan includes bringing together personal, organizational, and extra-organizational data—and tracking changes in the data—as soldiers progress through their first terms. At the same time, a cross section of soldiers at various points in their first terms will provide benchmarks against which the soldiers in the longitudinal investigation can be compared.

Survey Instrument Development

Data from many sources are needed to support answering the Army's questions about attrition and its causes. Although the Army routinely maintains information about many individual soldier characteristics—for example, the soldier's Armed Forces Qualification Test score, his or her educational attainment, Army courses attended, units of assignment, and so forth—there are many other characteristics that can be determined only by asking the soldier. In this category are such issues as the soldier's motivation for joining the Army, the influence of family members or friends on that decision, the soldier's confidence in his or her own abilities, and so forth. To insure a comprehensive analysis of factors that might be relevant to attrition, the research team developed targeted surveys to be administered at various career points.

These surveys are structured around the conceptual model of person, organizational, and extra-organizational factors that may affect attrition. First developed was a survey instrument specifically targeted for use with new recruits—the *Soldier Reception Survey* (SRS). A second survey instrument targets those soldiers completing Basic Combat Training (BCT), Advanced Individual Training (AIT), and One Station Unit Training (OSUT)—the *End of Training Survey* (EOT). Yet another survey instrument is designed for administration to soldiers who are leaving the Army during any phase of Initial Entry Training—the *Soldier Exit Survey*. A variation of the *Soldier Exit Survey* is also under development for use with soldiers leaving the Army from an operational unit. Finally, variations of the *End of Training Survey* will be used with soldiers at various phase points during their first term. Table 1 outlines the types of information each of these surveys is designed to collect.

In addition to the type of information outlined in Table 1, the Soldier Exit Survey also asks soldiers specifically why they are leaving the Army, and what might have helped them to stay in the Army. Appendix A includes copies of the survey instruments.

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Table 1. Survey Instruments

Area of Interest	Soldier Reception Survey (SRS)	End of Training Survey (EOT)	Soldier Exit Survey (Exit)
Motivation	X		
Behavioral Profile	X		
Values	X	X	
Confidence/Concern	X	X	
Attachment	X	X	
Satisfaction		X	X
Leadership		X	X
Health			X

Beyond the surveys developed to collect data directly from soldiers, the research design calls for use of data in operational databases maintained by the Army for administrative purposes. These databases contain information on the individual characteristics and Army experiences of soldiers at entry (e.g., the Operational Recruiter Master File), during training (e.g., the Army Training Reporting Record System), and over their tenure in the Army (e.g., the Enlisted Master File). Assembly of the administrative data on all Fiscal Year 1999 accessions insures coverage of the entire cohort. These data also complement the survey data, allowing for more comprehensive information on soldiers over the first term of enlistment.

Data Collection Process

As indicated above, the cornerstone of this research is a longitudinal tracking of a group of soldiers through their first term. The particular group to be tracked is the Fiscal Year 1999 accession cohort. All members of that cohort—almost 100,000 recruits—will be included in the research. Electronic data routinely collected on all soldiers will be analyzed for the entire cohort. Survey data will supplement such routine data for a substantial subset of this cohort. Those recruits who arrived at an Army Reception Battalion between January and August 1999 were selected to participate in survey data collection.

Feasibility issues—and resource constraints—will limit the number of soldiers participating in survey data collection. On the feasibility side, because data collection could not interfere with normal training, the SRS and the EOT were typically administered on weekends. Some soldiers were committed to other tasks during the survey administration period, and therefore missed one or more surveys. At the same time, because the Army conducts AIT at 23 locations, resources constraints dictated that only a sample of AIT locations could be included in the EOT. Table 2 displays those installations participating in the survey process. The SRS and the EOT were administered at every location where the Army conducts BCT or OSUT. The installations chosen for AIT survey administration account for 90% of soldiers who attend AIT.

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Table 2. Survey Locations and Type of Survey

Installation	SRS	BCT-EOT	OSUT-EOT	AIT-EOT	Exit
Jackson	X	X		X	X
Benning	X	X	X		X
Leonard Wood	X	X	X	X	X
Sill	X	X	X	X	X
McClellan	X		X		X
Knox	X	X	X	X	X
Aberdeen				X	X
Gordon				X	X
Lee				X	X
Sam Houston				X	X
Eustis				X	X

Because soldiers are in a very structured environment during training, SRS and EOT data collection could rely on group-administered procedures. That is, soldiers were scheduled by company for survey administration. They were escorted to the administration facility (auditorium or classrooms) by drill sergeants. Civilian employees of the contractor distributed surveys, read instructions, kept track of time, collected completed surveys, and released soldiers back to their drill sergeants. Exit surveys, however, must be administered on an individual basis. As a routine part of processing to leave the Army, soldiers must visit the installation Transition Center. Transition Center personnel distributed and collected back the Exit Survey along with other documents the departing soldier must complete (e.g., change of address forms). Table 3 depicts the returns projected for survey administration in the training base.

Table 3. Projected Returns for Survey Administration in the Training Base

SRS	EOT--Basic	EOT—OSUT/AIT	Exit
54,033	37,756	27,089	7,100

Beyond the training environment, there will be little opportunity to administer surveys in large groups. Instead, current plans call for annual surveys to be mailed in the spring of each year to members of the FY1999 accession cohort. Every member of the cohort will receive these surveys, which will be modeled after the EOT survey (with terminology updated to reflect the fact that the soldier is no longer in Initial Entry Training). A sample of Transition Centers in CONUS will continue to administer an Exit Survey to cohort members who leave the Army. This "Unit Exit Survey" will be very similar to the Training Exit Survey, again with adjustments to terminology appropriate to the soldier's status of leaving from a unit rather than from Initial Entry Training.

Because the research data collection extends until the FY1999 cohort completes its initial term of contracted service, definitive answers to questions surrounding attrition

will not be available for many years. At the same time, however, information addressing attrition from IET will be available much earlier. Similarly, the research plan includes provisions for collecting relevant survey data from a cross-section of first term soldiers as part of the Sample Survey of Military Personnel. That survey information will overlap to some extent with SRS and EOT questions, allowing the Army to compare the FY1999 cohort with other cohorts at different stages of the first term.

Table 4 summarizes data collection activities for this research program. Appendix B provides details of decision-making with regard to which installations should participate in survey data collection, while Appendix C contains details of the data-collection process.

Data Analysis Issues

As indicated above, the purpose of the attrition research program is to understand the causes of Army attrition and to answer specific questions that are being raised today. Those questions include the following:

How can the Army best account for attrition across the phases of the first term of enlistment (e.g., initial entry training, initial operational assignment)?
- What person variables contribute to attrition at each phase?
- What are the effects of organizational conditions?
- What role do extra-organizational factors such as family status or employment opportunities play?
- Do different factors affect the attrition and retention of high and low performers?
- How do all these variables interact in a comprehensive model of soldier adaptation to the Army?

How can the Army impact the factors that drive attrition rates?
- What strategies are likely to be effective for managing attrition at each phase of the first term of enlistment?
- How can attrition management models and strategies best take into account future Army requirements?

Answers to these questions will require analysis of complex relationships between attrition and the person, organization, and extra-organizational conditions. Additionally, data are being collected over a long time, from multiple sources, in multiple forms. Appendix D details an analysis plan to help the Army make sense of all of the data being collected, and to insure that critical questions are answered during the analysis.

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Table 4. Attrition Research Data Collection

When	Who	Where	Measures
Jan – Aug 99	BCT/OSUT Recruits, "99 Cohort"	Reception Battalions	SRS
Jan – Dec 99	BCT/OSUT Attrits from 99 Cohort	Transition Centers	Exit Q
Mar – Dec 99	BCT/OSUT Graduates from 99 Cohort	Training Brigades	EOT
Mar – Dec 99	Sample of AIT Graduates from 99 Cohort	Training Brigades	EOT
Mar – Dec 99	Sample of AIT Attrits from 99 Cohort	Transition Centers	Exit Q
Jan – Dec 99	Attrits from 99 Cohort	Worldwide	Separation Folders
Aug 99	Sample of BCT/OSUT Trainees	FT Jackson & FT Benning	"Red" Ratings
Aug 99 – Sep 99	Sample of AIT Trainees	Various	"Blue" Ratings
Feb – May 99	Sample of all E-1 to E-4	Mail Survey/Units	SSMP
Oct 99 – Feb 03	Sample of Army Attrits from 99 Cohort	Transition Centers	Exit Q
Feb 2000	Sample of 99 Cohort	Mail Survey/Units	TBD
Feb 2001	Sample of 99 Cohort	Mail Survey/Units	TBD
Feb 2002	Sample of 99 Cohort	Mail Survey/Units	TBD
Feb 2003	Sample of 99 Cohort	Mail Survey/Units	TBD

The data analysis plan includes the following components:

1. Creating the analysis database;

2. Modeling the attrition process to identify causes of attrition;

3. Testing hypotheses derived from the model that allow one to identify preventive or remedial practices that can be used to reduce attrition;

4. Comparing the official reasons for attrition with self-reported reasons; and

5. Determining whether the quality of soldiers who separate differs from the quality of soldiers who remain.

Schedule and Products

Figure 1 depicts the time line for the research program. Phase I—structuring the attrition database—was completed in January 1998. Phase II—planning for the comprehensive study—began in June 1998. Phase III—implementing the data collection plan—began with survey data collection at the Reception Battalions in January 1999. Survey data collection at BCT, OSUT, and AIT will be completed by December 1999. Data collection from soldiers in units—and from soldiers leaving the Army—will continue through February 2003.
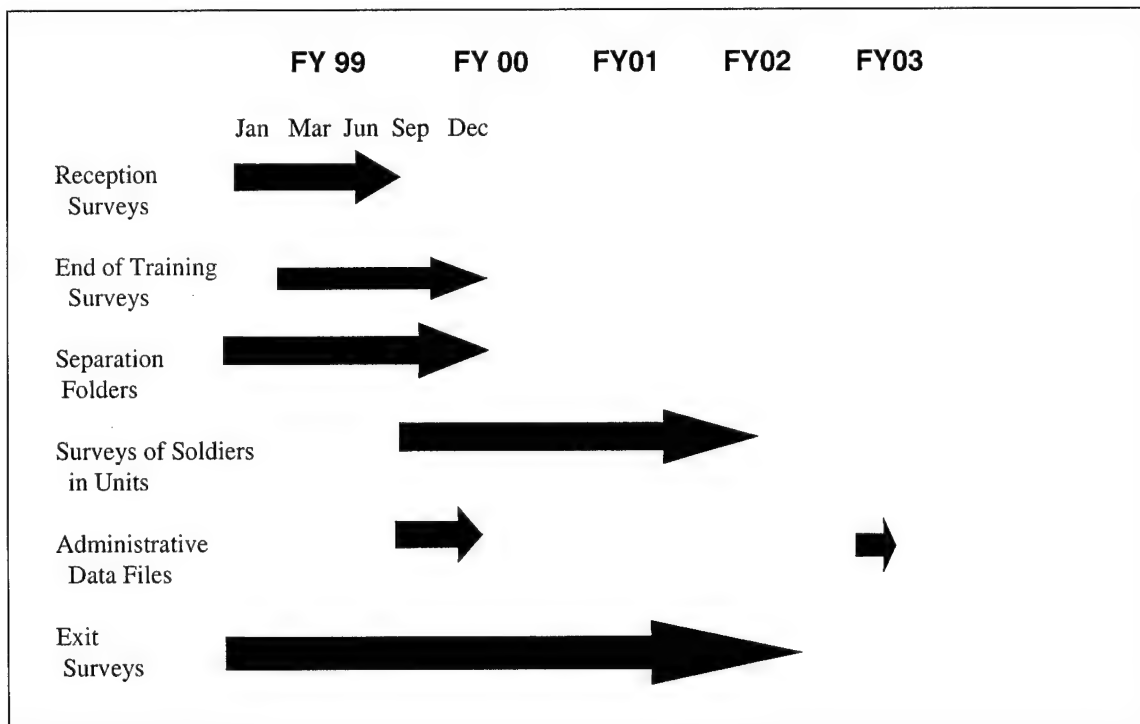

Figure 1. Project Schedule

Fundamentally, the products of this research program are answers to questions about attrition. To get to that point, interim products will include a database that assembles in one place relevant data from numerous Army files and merges these data with data collected from soldiers in multiple surveys over time. Relatively early in the program, there will be an analysis of attrition from the entry training base, and recommendations for improving the official separation codes used during entry training. Midway in the program, models will be proposed to account for attrition; validating those models will require data collected across the entire first term. Table 5 summarizes the research products and their expected availability.

Table 5. First-Term Attrition Products

PRODUCT	FY					
	99	00	01	02	03	04
Database for examining reasons for attrition	4Q					
Reasons for attrition from the entry training base		2Q				
Recommendations for improving official codes for separation during entry training		4Q				
Identification of determinants of attrition or completion of the first term of enlistment			4Q			
Validation of identified determinants of attrition or service completion				4Q		
Preliminary model of first-term attrition and retention					2Q	
Model of first term attrition and retention						4Q
Recommendations for reducing first-term attrition and improving retention						4Q

Summary

ARI has initiated a comprehensive investigation of enlisted attrition across the first-term life cycle. The overall approach of the research is depicted in Figure 2. Focusing on soldiers who entered the Army in Fiscal Year 1999, the research methodology includes analysis of data from Army records as well as from the soldiers themselves. The data collection activities include administering surveys at the time of entry onto active duty, at completion of training, and annually through the first term. In addition, soldiers who leave the Army before completing their contracted term of service will also be surveyed. All of the survey data will be merged with Army record data from various sources. Products from this research program include reports addressing attrition from the training base, a model of first term attrition, and recommendations for managing

attrition—all targeted at answering the critical questions that Army policy makers are asking about attrition. The overall goal is to help the Army understand and manage attrition.

Survey Periods for Year Group 99 Soldiers

ENTRY –
Expectations

END of TRAINING –
Early impressions

UNIT –
On-the-job
experiences

Contrast
Samples --
Forecasts &
validation
of trends

Data analyses for answers about attrition, completion, and retention

ARMY FILES
Indicators of
success over
the career

EXIT SURVEY --Self reported
reasons for attrition

Products :
• Causes of
first-term
attrition
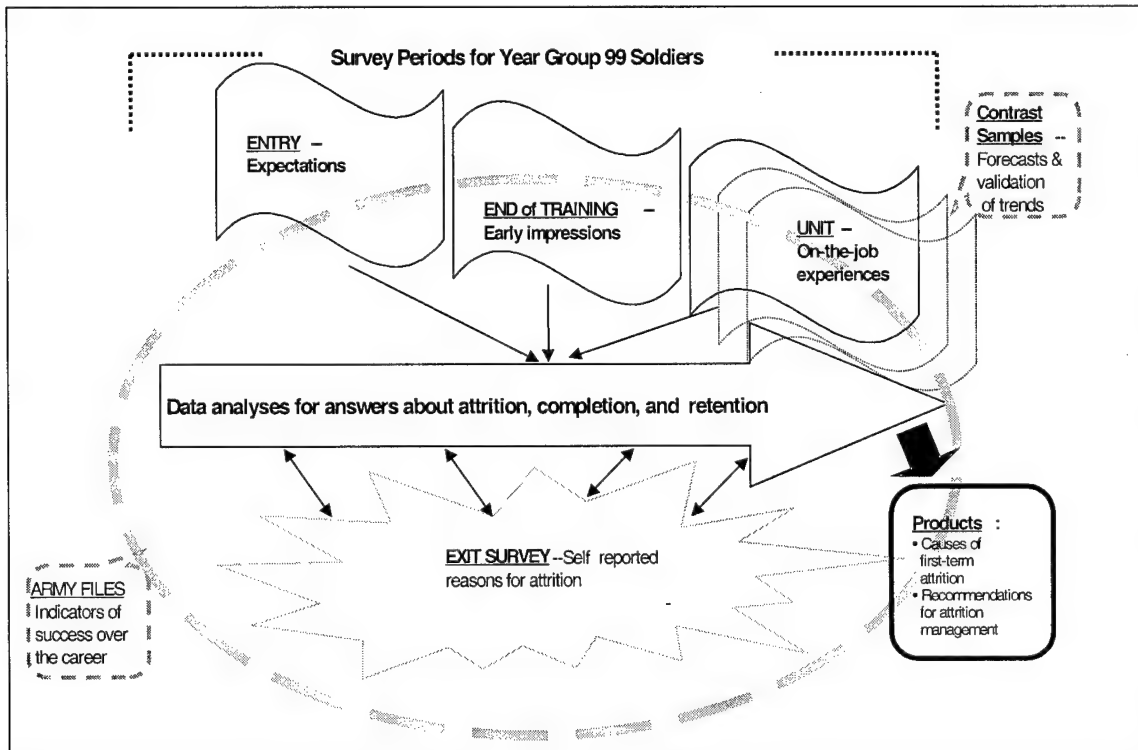• Recommendations
for attrition
management

Figure 2. Summary of Approach

Appendix A

Designing and Planning a Comprehensive Investigation
of Enlisted Attrition Across the First-Term Life Cycle

Survey Instruments

SOLDIER RECEPTION SURVEY

The **Soldier Reception Survey** is part of a research project to evaluate the attitudes and experiences of enlisted personnel during their careers in the United States Army. In this project, the U.S. Army Research Institute (ARI) will assess the expectations and impressions of new recruits, soldiers completing training, and personnel exiting the Army. The project covers a wide range of issues related to soldiers' jobs, careers, and the Army as a whole. The overall purpose is to provide senior Army leaders information for recruiting, training, and retaining a high quality force of soliders.

Thank you for your support for this survey program.

PRIVACY ACT STATEMENT

1. The Department of the Army may collect the information requested in this survey under the authority of 10 United States Code 2358. Providing information in this questionnaire is voluntary. Failure to respond to any specific question will not result in any penalty.

2. Public Law 93-573 (Privacy Act of 1974) requires that you be informed of the purpose and uses to be made of the information collected. The information collected in the survey will be used solely for research purposes. Your Social Security Number (SSN) is requested only for linking data files. Use of SSNs is authorized by Executive Order 9397. In accordance with federal regulations, the survey data will be safeguarded to protect your privacy. After we have used your SSN to create the data files, a new identification code will be created to replace your SSN. The file linking your SSN to the new ID code will be properly secured to preserve confidentiality. Only survey statisticians involved in collecting or preparing the information for analysis will have access to completed questionnaires. Only group statistics will be reported.

How to fill out this survey.

Read each question carefully and mark your answers directly on this form.

MARKING INSTRUCTIONS

- **Please use a No. 2 pencil.**
- **Please completely fill in the response as shown in the examples:**

Some questions ask you to mark ONLY ONE answer.

What component of the Army did you join? Mark the option that best describes you.

- ● Active Army
- ○ Reserve
- ○ National Guard

Other questions ask you to mark MORE THAN ONE answer.

Which of the following strongly influenced you to join the Army? MARK ALL THAT APPLY.

- ○ Parent(s)/Guardian(s)
- ● Friend(s)
- ○ Wife/Husband/Girlfriend/Boyfriend
- ● Athletic Coach
- ● Teacher

1. **Listed below are some reasons why people join the Army. How important was each of these reasons in your decision to join the Army?**

   Extremely important
   Very important
   Moderately important
   Slightly important
   Not at all important

   a. Army advertising ....① ② ③ ④ ⑤
   b. Army recruiter.......................① ② ③ ④ ⑤
   c. Desire to serve my country ....① ② ③ ④ ⑤
   d. Develop self-discipline ....① ② ③ ④ ⑤
   e. Earn more money than previous job(s).① ② ③ ④ ⑤
   f. Educational benefits ....① ② ③ ④ ⑤
   g. Family social support services ....① ② ③ ④ ⑤
   h. Get away from a personal problem ...① ② ③ ④ ⑤
   i. Influence of family ....① ② ③ ④ ⑤
   j. Influence of friends ....① ② ③ ④ ⑤
   k. Lack of civilian job opportunities .....① ② ③ ④ ⑤
   l. Medical care, coverage and benefits..① ② ③ ④ ⑤
   m. Military tradition in family ....① ② ③ ④ ⑤
   n. Need to be on my own ....① ② ③ ④ ⑤
   o. Pay and allowances ....① ② ③ ④ ⑤
   p. Security and stability of a job ....① ② ③ ④ ⑤
   q. Training in job skills.................① ② ③ ④ ⑤
   r. Chance to travel ....① ② ③ ④ ⑤
   s. Repayment of loans ....① ② ③ ④ ⑤
   t. Prove that I could do it ....① ② ③ ④ ⑤
   u. Make Army a career ....① ② ③ ④ ⑤
   v. Become more mature...............① ② ③ ④ ⑤
   w. Take time out to decide about my
      life plans ....① ② ③ ④ ⑤
   x. Gain job experience ....① ② ③ ④ ⑤
   y. Escape from a bad neighborhood ....① ② ③ ④ ⑤
   z. Needed a place to live ....① ② ③ ④ ⑤
   aa. Chance for adventure...............① ② ③ ④ ⑤

2. **Which of the following strongly influenced you to join the Army? MARK ALL THAT APPLY.**
   ○ Parent(s)/Guardian(s)
   ○ Brother/Sister
   ○ Friend(s)
   ○ Wife/Husband/Girlfriend/Boyfriend
   ○ Athletic Coach
   ○ Teacher
   ○ School Guidance Counselor
   ○ ROTC student
   ○ ROTC cadre member
   ○ Service member
   ○ Recruiter
   ○ Radio advertisement
   ○ Television advertisement
   ○ Printed advertisement

3. **What component of the Army did you join? Mark that option that best describes you.**
   ○ Active Army
   ○ Reserve
   ○ National Guard

4. **How familiar are you with what will be expected of you in the Army?**
   ○ Extremely familiar
   ○ Very familiar
   ○ Moderately familiar
   ○ A little familiar
   ○ Not at all familiar

5. **How long did you participate in the Delayed Entry Program (DEP)?**
   ○ Less than 1 month
   ○ 1 month
   ○ 2 months
   ○ 3 months
   ○ 4 months
   ○ 5 months
   ○ 6 months
   ○ 7 months
   ○ 8 months
   ○ 9 months
   ○ 10 months
   ○ 11 months
   ○ 12 months

6. **How often did your recruiter hold DEP activities?**
   ○ More than once a month
   ○ About once a month
   ○ Less than once a month
   ○ Never
   ○ Don't know

7. **How often did you attend DEP activities?**
   ○ More than once a month
   ○ About once a month
   ○ Less than once a month
   ○ Never (Why not? Please list below)

   _____

8. **In which of the following activities did you participate while in the DEP? MARK ALL THAT APPLY.**
   ○ None
   ○ Social functions with other people in the DEP
   ○ Films, speakers, or question and answer sessions
      to get more information about Army
   ○ Training sessions; for example, drill and
      ceremonies or first aid training
   ○ Field trips to Army posts
   ○ Physical training/exercise sessions
   ○ Other types of DEP activities (please list below)

   _____

9. **How important is each of the following TO YOU PERSONALLY?**

Extremely important
Very important
Quite important
Moderately important
Somewhat important
Slightly important
Not at all important

a. Loyalty to the United States
Army .... ① ② ③ ④ ⑤ ⑥ ⑦
b. Taking responsibility for your
actions and decisions.......... ① ② ③ ④ ⑤ ⑥ ⑦
c. Putting what is good for others
above your own welfare........ ① ② ③ ④ ⑤ ⑥ ⑦
d. Dedication to serving the
United States, even to risking
your life in its defense.......... ① ② ③ ④ ⑤ ⑥ ⑦
e. Commitment to working as a
member of a team............. ① ② ③ ④ ⑤ ⑥ ⑦
f. Dedication to learning your job
and doing it well............... ① ② ③ ④ ⑤ ⑥ ⑦
g. Personal drive to succeed in
your work and advance .... ① ② ③ ④ ⑤ ⑥ ⑦
h. Being honest, open and truthful . ① ② ③ ④ ⑤ ⑥ ⑦
i. Being courageous............. ① ② ③ ④ ⑤ ⑥ ⑦
j. Standing up for what you firmly
believe is right .... ① ② ③ ④ ⑤ ⑥ ⑦
k. Working with others tactfully .... ① ② ③ ④ ⑤ ⑥ ⑦
l. Exhibiting excellent appearance.. ① ② ③ ④ ⑤ ⑥ ⑦
m. High moral standards .... ① ② ③ ④ ⑤ ⑥ ⑦
n. Building and maintaining
physical fitness and stamina.... ① ② ③ ④ ⑤ ⑥ ⑦

BACKGROUND INFORMATION

10. **In what year were you born?**

19 | |
- (0)
- (1)
- (2)
- (3)
- (4)
- (5) (5)
- (6) (6)
- (7) (7)
- (8) (8)
- (9) (9)

11. **When you were growing up, did you have a parent/ guardian who was career active duty military?**
○ Yes   ○ No

12. **Are you:**
○ Male   ○ Female

13. **How many dependent children do you have (for whom you provide financial support)?**
○ None   ○ 1   ○ 2   ○ 3   ○ 4 or more

14. **Are you of Hispanic/Spanish origin or ancestry (of any race)?**
○ No
○ Yes, Mexican, Mexican-American, Chicano
○ Yes, Puerto Rican
○ Yes, other Hispanic/Spanish

15. **What is your racial background?**
○ American Indian, Eskimo or Aleut
○ Asian or Pacific Islander
○ Black
○ White

ABOUT YOUR EDUCATION

16. **Fill in the circles for each grade you finished. It's OK to choose more than one type of school. Fill a circle for EACH grade you finished.**

	PUBLIC school	PRIVATE school	Classes mostly at HOME	GED equivalency
Grade 1	○	○	○	○
Grade 2	○	○	○	○
Grade 3	○	○	○	○
Grade 4	○	○	○	○
Grade 5	○	○	○	○
Grade 6	○	○	○	○
Grade 7	○	○	○	○
Grade 8	○	○	○	○
Grade 9	○	○	○	○
Grade 10	○	○	○	○
Grade 11	○	○	○	○
Grade 12	○	○	○	○

IMPORTANT: Make sure you filled a circle above for EVERY GRADE you finished.

17. **Did you finish high school?**
○ No   ○ Yes. If yes, choose the credential(s) you earned when you finished high school.
Fill in at least one circle:
○ Diploma – earned from a public or private **traditional day school**
○ Diploma – earned from an **adult (continuation)** school
○ Diploma – issued by parents or tutors for **home schooling**
○ Diploma – issued by an association, school, or state for **home schooling**
○ Diploma – issued by a **vocational or technical** school
○ Diploma – issued by a **correspondence** school
○ GED **equivalency** diploma
○ Certificate – for high school **attendance or completion**

18. **Did you finish one semester/quarter of college (at least 4 courses)? Do not include advanced placement courses you took in high school.**

○ No   ○ Yes. If yes, fill in your highest level:
          ○ One or more semesters/quarters of college
          ○ One or more semesters/quarters of vocational college
          ○ An associate degree
          ○ A bachelor's or higher degree

19. **Did you participate in the National Guard ChalleNGe program?**

○ No   ○ Yes. If yes, did you graduate from ChalleNGe?
          ○ No   ○ Yes

20. **What was your average grade during the time you were in high school?**

○ A or A-
○ B+ or B
○ B- or C+
○ C or C-
○ D or lower

21. **Are you planning to go to college?**

○ Yes, while on active duty during this enlistment
○ Yes, after I complete this term of active duty
○ No
○ Undecided

22. **Did you ever get into trouble at school for doing any of the things below? Mark all things for which you were sent to the principal's office. MARK ALL THAT APPLY.**

○ I was never sent to the principal's office
○ Missing class
○ Skipping school
○ Fighting
○ Being disorderly
○ Bad language
○ Smoking
○ Talking back to teachers
○ Other reasons

23. **Were you ever expelled from high school or junior high (intermediate school)?**

○ Yes
○ No

24. **Were you ever suspended from high school or junior high (intermediate school)?**

○ Yes
○ No

25. **If you ever thought about quitting high school, show why. MARK ALL THAT APPLY.**

○ I never thought about quitting high school
○ My family needed money or needed me at home
○ I was expelled or suspended
○ I was bored, wasn't learning anything useful
○ I got married or became a parent
○ I was getting bad grades
○ I didn't get along with the other students
○ The rules were too strict
○ I wasn't going to graduate on time
○ I didn't get along with the teachers, counselors, or the principal
○ I wanted to work full time
○ Other reasons

26. **During high school, did you participate in any of the following activities? MARK ONE RESPONSE FOR EACH ACTIVITY.**

	Participated as a Leader or Officer	Participated	Did Not Participate
a. Athletic teams	○	○	○
b. Drama, music, art, chorus	○	○	○
c. School clubs	○	○	○
d. Other clubs (Scouts, "Y", 4-H, etc.)	○	○	○

27. **During your high school years, what size city or area did you live in?**

○ Large city (over 300,000 people)
○ Suburb of a large city
○ Medium-sized city (50,000-300,000)
○ Small city or town (under 50,000)
○ Rural area

28. **What is your current marital status?**

○ Married
○ Legally separated or filing for divorce
○ Single, never married
○ Single, engaged to be married
○ Divorced
○ Widowed

29. **Is there an important girlfriend/boyfriend in your life right now?**

○ Does not apply; I am currently married
○ Yes
○ No

30. **Is your spouse/girlfriend/boyfriend currently working in a civilian job (including a job with the U.S. Army/Department of Defense)? MARK ONE.**
   - ○ Does not apply; I do not have a spouse/ girlfriend/boyfriend
   - ○ Does not apply; my spouse/girlfriend/boyfriend is on active duty
   - ○ Yes, full-time
   - ○ Yes, part-time
   - ○ No, but is currently looking for work
   - ○ No, not looking for work but would like to work
   - ○ No, does not want to work now

31. **How supportive is your spouse/girlfriend/boyfriend of your making a career of the Army?**
   - ○ Does not apply; I do not have a spouse/ girlfriend/boyfriend
   - ○ Very supportive
   - ○ Fairly supportive
   - ○ Mixed or neutral
   - ○ Fairly unsupportive
   - ○ Very unsupportive

32. **When your spouse/girlfriend/boyfriend was growing up, did he/she have a parent/guardian who was <u>career</u> active duty military?**
   - ○ Does not apply; I do not have a spouse/ girlfriend/boyfriend
   - ○ Yes
   - ○ No
   - ○ Don't know

33. **Is your spouse/girlfriend currently pregnant?**
   - ○ Does not apply; I do not have a female spouse/ girlfriend
   - ○ Yes
   - ○ No, but plans to be within one year
   - ○ No, but maybe in the future
   - ○ No, and does not plan to be
   - ○ Don't know

34. **During the last 12 months, have you (or your spouse/girlfriend) given birth to a child?**
   - ○ Does not apply
   - ○ Yes
   - ○ No

35. **During the two years before entering the Army, what was your average level of fitness?**
   - ○ Very high
   - ○ High
   - ○ Moderate
   - ○ Low
   - ○ Very low

36. **During the two years before entering the Army, how many fairly serious physical injuries did you receive?**
   - ○ None
   - ○ 6-9
   - ○ 1-2
   - ○ 10 or more
   - ○ 3-5

37. **During the two years before entering the Army, were you ever advised by a medical practitioner not to participate in any exercise or sport programs?**
   - ○ Yes
   - ○ No

38. **Have you ever left a job for any of the following reasons? MARK ALL THAT APPLY.**
   - ○ I haven't had a job outside the home
   - ○ I went back to school
   - ○ The pay was not good
   - ○ I was laid off
   - ○ I was fired
   - ○ I found a better job
   - ○ I moved to another location
   - ○ I didn't get along with my supervisor
   - ○ I was arrested
   - ○ There was no chance to get ahead
   - ○ The working conditions were bad (dangerous, hot, dusty, etc.)
   - ○ To join the military
   - ○ Other reasons

39. **Did you need to get a moral waiver in order to be accepted by the Army?**
   - ○ Yes
   - ○ No

40. **Did you need to get a medical waiver in order to be accepted by the Army?**
   - ○ Yes
   - ○ No

41. **What is the length of your enlistment term?**
   - ○ 2 years
   - ○ 3 years
   - ○ 4 years
   - ○ More than 4 years

42. **During the last 6 months before entering the DEP, how often did you smoke cigarettes?**
   - ○ Never
   - ○ Rarely
   - ○ Once a week or so
   - ○ 2-3 times a week
   - ○ 4-5 times a week
   - ○ Daily

43. **During the last 6 months before entering the DEP, how often did you drink alcoholic beverages?**
   - ○ Never
   - ○ Rarely
   - ○ Once a week or so
   - ○ 2-3 times a week
   - ○ 4-5 times a week
   - ○ Daily

44. How strongly do you agree or disagree with the following statements about your military life? MARK A RESPONSE FOR EACH.

Strongly Agree
Agree
Neither Agree nor Disagree
Disagree
Strongly Disagree

a. The Army has a great deal of personal meaning to me .... ① ② ③ ④ ⑤
b. It would be too costly for me to leave the Army in the near future .... ① ② ③ ④ ⑤
c. I am afraid of what might happen if I quit the Army without having another job lined up .... ① ② ③ ④ ⑤
d. Too much in my life would be disrupted if I decided I wanted to leave the Army now................. ① ② ③ ④ ⑤
e. I feel a strong sense of belonging to the Army .... ① ② ③ ④ ⑤
f. I feel "emotionally attached" to the Army................................ ① ② ③ ④ ⑤
g. One of the problems of leaving the Army would be the lack of good alternatives .... ① ② ③ ④ ⑤

45. From what you know and have heard about the Army and civilian life, please indicate how you believe conditions in the military are compared with conditions in a civilian job you could realistically expect to get. MARK A RESPONSE FOR EACH.

Much Better in Army
Somewhat Better in Army
About the Same
Somewhat Better in Civilian Life
Much Better in Civilian Life
Don't Know

a. Pay .... ① ② ③ ④ ⑤ ⑥
b. Retirement benefits .... ① ② ③ ④ ⑤ ⑥
c. Benefits other than retirement ..... ① ② ③ ④ ⑤ ⑥
d. Assistance for civilian education ... ① ② ③ ④ ⑤ ⑥
e. Opportunities to advance in your chosen field .... ① ② ③ ④ ⑤ ⑥
f. Opportunities for job safisfaction... ① ② ③ ④ ⑤ ⑥
g. Quality of co-workers .... ① ② ③ ④ ⑤ ⑥
h. Working hours/schedule .... ① ② ③ ④ ⑤ ⑥
i. Time for personal/family life .... ① ② ③ ④ ⑤ ⑥
j. Overall quality of life .... ① ② ③ ④ ⑤ ⑥
k. Level of professionalism in the organization..................... ① ② ③ ④ ⑤ ⑥
l. Personal freedom .... ① ② ③ ④ ⑤ ⑥
m. Job security .... ① ② ③ ④ ⑤ ⑥
n. Total family income .... ① ② ③ ④ ⑤ ⑥

46. How confident are you that you will: MARK A RESPONSE FOR EACH.

Extremely Confident
Very Confident
Moderately Confident
Slightly Confident
Not Confident At All

a. Adapt to Army life .... ① ② ③ ④ ⑤
b. Complete your term of obligation ..... ① ② ③ ④ ⑤
c. Meet the Army's physical requirements....................... ① ② ③ ④ ⑤
d. Be successful in basic training .... ① ② ③ ④ ⑤
e. Earn promotions in the Army......... ① ② ③ ④ ⑤

47. The kind of work I enjoy most is available:

○ only in the military.
○ primarily in the military.
○ equally in the military and civilian world.
○ primarily in the civilian world.
○ only in the civilian world.

48. Considering both your own qualifications and current labor market conditions, how difficult do you think it would be for you to find a good civilian job right now?

○ Very difficult
○ Difficult
○ Not particularly difficult or easy
○ Easy
○ Very easy

49. My personal or family situation would make it difficult for me to leave the Army in the next year or so.

○ Strongly agree
○ Agree
○ Neither agree nor disagree
○ Disagree
○ Strongly disagree

50. Which ONE of the following best describes your current Army career intentions? MARK ONE.

○ PROBABLY stay in until retirement
○ DEFINITELY stay in until retirement
○ PROBABLY stay in beyond my present obligation, but not necessarily to retirement
○ DEFINITELY stay in beyond my present obligation, but not necessarily to retirement
○ PROBABLY leave upon completion of my present obligation
○ DEFINITELY leave upon completion of my present obligation

51. How many years of active duty service do you expect to have completed by the time you leave the Army? (Zero if no active duty)

(0)	(0)
(1)	(1)
(2)	(2)
(3)	(3)
	(4)
	(5)
	(6)
	(7)
	(8)
	(9)

52. A male friend who you think is qualified asks your advice about joining the Army. Would you recommend that he . . . (MARK ONE)
- ○ join the Army?
- ○ join another military service?
- ○ not join a military service?

53. A female friend who you think is qualified asks your advice about joining the Army. Would you recommend that she . . . (MARK ONE)
- ○ join the Army?
- ○ join another military service?
- ○ not join a military service?

54. Do any of the following cause you to be unsure about an Army career? MARK ALL THAT APPLY.
- ○ My lack of experience in the Army
- ○ My career goals are unclear
- ○ Unsure of chances for promotion
- ○ Changes in Army job opportunities
- ○ Changes in the Army mission
- ○ Possibility of being subjected to sexual or racial discrimination
- ○ None of the above

55. How has your commitment to an Army career changed since you signed your Army contract?
- ○ Much greater now
- ○ Somewhat greater now
- ○ About the same as it was when I signed
- ○ Somewhat less now
- ○ Much less now

56. At the present time, how do you feel about your decision to enlist in the Army?
- ○ Definitely made the right decision
- ○ Probably made the right decision
- ○ Not sure
- ○ Probably made the wrong decision
- ○ Definitely made the wrong decision

57. Assume you were to leave the Army in the next six months. Which of the following reasons for leaving would likely apply in your case? RESPOND TO EACH ITEM.

Not Likely to Apply

Likely to Apply

a. Failure to meet physical requirements . . . . . ○ ○
b. Problems adjusting to Army life . . . . ○ ○
c. Family problems at home . . . . ○ ○
d. Pregnancy . . . . ○ ○
e. Disciplinary problems; minor offense . . . . ○ ○
f. Poor academic performance . . . . ○ ○
g. Illness/medical condition . . . . ○ ○
h. Homesickness . . . . ○ ○
i. Lack of motivation; boredom . . . . ○ ○
j. Problems with supervisors . . . . ○ ○
k. Racial discrimination . . . . ○ ○
l. Sexual or gender discrimination . . . . ○ ○
m. Better job opportunities outside the Army . . . ○ ○
n. Injuries sustained during training . . . . ○ ○
o. Not getting desired military job . . . . ○ ○
p. Sexual harassment . . . . ○ ○
q. One or more serious offenses . . . . ○ ○
r. Not getting along with others . . . . ○ ○

58. At the present time, what level of strain, conflict or stress – if any – are you experiencing about your stay in the Army?
- ○ Very high   ○ Low
- ○ High   ○ Very low
- ○ Moderate   ○ None

59. How would you rate your current level of morale?
- ○ Very high   ○ Low
- ○ High   ○ Very low
- ○ Moderate

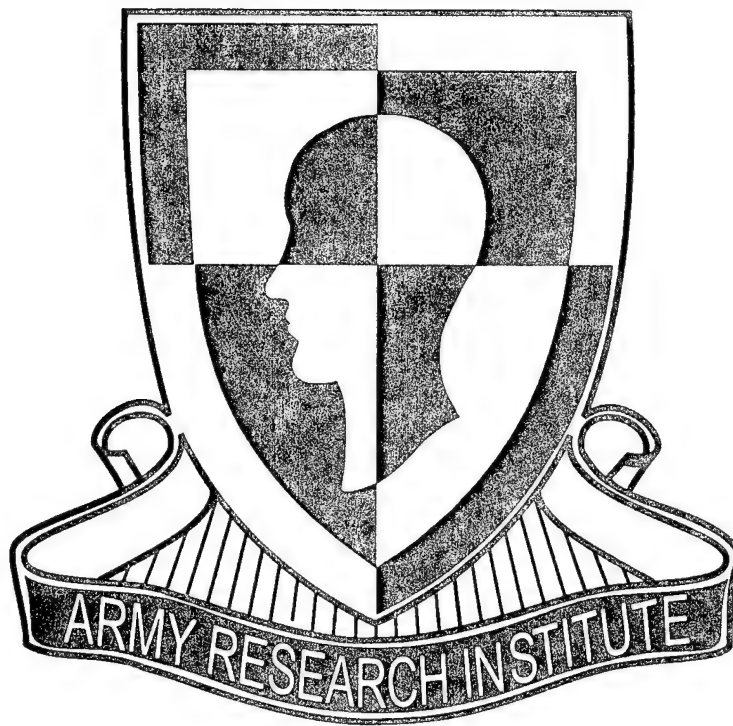**60. Have you participated in Values Training since entering the Army?**
- ○ Yes   ○ No

61. Enter your Social Security Number below.

			–			–				
0	0	0		0	0		0	0	0	0
1	1	1		1	1		1	1	1	1
2	2	2		2	2		2	2	2	2
3	3	3		3	3		3	3	3	3
4	4	4		4	4		4	4	4	4
5	5	5		5	5		5	5	5	5
6	6	6		6	6		6	6	6	6
7	7	7		7	7		7	7	7	7
8	8	8		8	8		8	8	8	8
9	9	9		9	9		9	9	9	9

R14860-PFI-5432

SOLDIER END-OF-TRAINING SURVEY

SURVEY APPROVAL AUTHORITY: U.S. ARMY RESEARCH
INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
SURVEY CONTROL NUMBER: PT 60-18C

The **Soldier End-of-Training Survey** is part of a research project to evaluate the attitudes and experiences of enlisted personnel during their careers in the United States Army. The U.S. Army Research Institute (ARI) will assess the expectations and impressions of new recruits as well as enlisted personnel who have recently completed training and personnel exiting the Army. The project covers a wide range of issues related to soldiers' jobs, careers, and the Army as a whole. The overall purpose is to provide senior Army leaders information for recruiting, training, and retaining a high quality force of soliders.

Thank you for your support for this survey program.

PRIVACY ACT STATEMENT

1. The Department of the Army may collect the information requested in this survey under the authority of 10 United States Code 2358. Providing information in this questionnaire is voluntary. Failure to respond to any specific question will not result in any penalty.

2. Public Law 93-573 (Privacy Act of 1974) requires that you be informed of the purpose and uses to be made of the information collected. The information collected in the survey will be used solely for research purposes. Your Social Security Number (SSN) is requested only for linking data files. Use of SSNs is authorized by Executive Order 9397. In accordance with federal regulations, the survey data will be safeguarded to protect your privacy. After we have used your SSN to create the data files, a new identification code will be created to replace your SSN. The file linking your SSN to the new ID code will be properly secured to preserve confidentiality. Only survey statisticians involved in collecting or preparing the information for analysis will have access to completed questionnaires. Only group statistics will be reported.

How to fill out this survey.

Read each question carefully, and mark your answers directly on this form.

MARKING INSTRUCTIONS

		CORRECT	INCORRECT
• **Please use a No. 2 pencil.**			
• **Please completely fill in the response as shown in the examples:**		●	✓ ✗ ▪ ▩

Some questions ask you to mark ONLY ONE answer.

What stage of training are you currently completing? MARK ONE.

- ● Basic Training (BT)
-   Advanced Individual Training (AIT)
-   One Station Unit Training (OSUT)

Other questions ask you to mark MORE THAN ONE answer.

Since you joined the Army, was the most <u>severe</u> punishment for the <u>same type of offense</u> usually given to: MARK ALL THAT APPLY.

-   Does not apply; all are treated the same
- ● Men
-   Women
- ● Whites
- ● Blacks
-   Hispanics
-   Some other race/ethnic group (PLEASE LIST)

1. **What component of the Army did you join? Mark the option that best describes you.**
   - ○ Active Army
   - ○ Reserve
   - ○ National Guard

2. **Enter your Social Security Number below.**

			–			–				
⓪	⓪	⓪		⓪	⓪		⓪	⓪	⓪	⓪
①	①	①		①	①		①	①	①	①
②	②	②		②	②		②	②	②	②
③	③	③		③	③		③	③	③	③
④	④	④		④	④		④	④	④	④
⑤	⑤	⑤		⑤	⑤		⑤	⑤	⑤	⑤
⑥	⑥	⑥		⑥	⑥		⑥	⑥	⑥	⑥
⑦	⑦	⑦		⑦	⑦		⑦	⑦	⑦	⑦
⑧	⑧	⑧		⑧	⑧		⑧	⑧	⑧	⑧
⑨	⑨	⑨		⑨	⑨		⑨	⑨	⑨	⑨

3. **What stage of training are you currently completing? MARK ONE.**
   - ○ Basic Combat Training (BCT)
   - ○ Advanced Individual Training (AIT)
   - ○ One Station Unit Training (OSUT)

4. **How satisfied are you with the training you have received since you entered the Army?**
   - ○ Very satisfied
   - ○ Satisfied
   - ○ Neither satisfied nor dissatisfied
   - ○ Dissatisfied
   - ○ Very dissatisfied

5. **How realistic were the expectations you had about Army life before you joined the Army?**
   - ○ Very realistic
   - ○ Mostly realistic
   - ○ Mostly unrealistic
   - ○ Very unrealistic

6. **Have you participated in Values Training since entering the Army?**
   - ○ Yes
   - ○ No

7. **How has Army life compared with your expectations before you joined the Army?**
   - ○ Much better than I expected
   - ○ Somewhat better than I expected
   - ○ About the same as I expected
   - ○ Somewhat worse than I expected
   - ○ Much worse than I expected

8. **To what extent has your most recent training .... MARK A RESPONSE FOR EACH.**

   Very great extent
   Great extent
   Moderate extent
   Slight extent
   Not at all
   No basis to judge

   a. contributed toward your professional development?........ ① ② ③ ④ ⑤ ⑥
   b. instilled Army values? .... ① ② ③ ④ ⑤ ⑥
   c. prepared you to perform your Army duties? .... ① ② ③ ④ ⑤ ⑥
   d. prepared you for your future Army assignments? .... ① ② ③ ④ ⑤ ⑥

9. **How has your commitment to an Army career changed during this training?**
   - ○ Much greater now
   - ○ Somewhat greater now
   - ○ About the same as it was when I started training
   - ○ Somewhat less now
   - ○ Much less now

10. **What effect, if any, have your Army experiences had on the development of <u>specific job knowledge, skills, and abilities</u> that will help you perform a civilian job?**
    - ○ Extremely positive effect   ○ No effect
    - ○ Very positive effect   ○ Don't know
    - ○ Little effect

11. **What effect, if any, have your Army experiences had on the development of <u>personal characteristics and attitudes</u> that will help you perform a civilian job?**
    - ○ Strong positive effect   ○ Negative effect
    - ○ Postive effect   ○ Strong negative effect
    - ○ No effect   ○ No basis to judge

12. **How does your physical health compare now to what it was when you first entered the Army?**
    - ○ Much better now   ○ Somewhat worse now
    - ○ Somewhat better now   ○ Much worse now
    - ○ About the same as it was

13. **During your recent training, did you have any medical problems/injuries for which you visited a Doctor or the Troop Medical Command (TMC)?**
    - ○ Yes
    - ○ No

14. **Before you enlisted, were you ever advised by a medical practitioner not to participate in any physical exercise or sports program because of a problem/injury similar to the one you had during your recent training?**
    - ○ Yes
    - ○ No
    - ○ Does not apply; I had no medical problem/ injury during training

15. Please indicate your level of agreement with the following statements. MARK A RESPONSE FOR EACH.

Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree

a. The Army will allow me to maintain the standard of living I want for myself/my family 1 2 3 4 5

b. The Army will allow me to maintain the kind of balance I want between my work and personal life 1 2 3 4 5

c. Even if I had an offer of a bit more pay from a civilian organization, I would be reluctant to leave the Army . . 1 2 3 4 5

d. I would discourage a close friend from joining the Army 1 2 3 4 5

e. The demands of the Army make it difficult to have the kind of family life I would like 1 2 3 4 5

f. I can count on Army people to help out when needed 1 2 3 4 5

g. I frequently feel like leaving the Army . . 1 2 3 4 5

h. I am quite proud to tell people that I am in the Army 1 2 3 4 5

i. For me, a rewarding career can compensate for limited personal/family time 1 2 3 4 5

j. I can get ahead in the Army doing the kinds of work I like best 1 2 3 4 5

k. The Army has a great deal of positive meaning to me 1 2 3 4 5

l. I feel a strong sense of belonging to the Army 1 2 3 4 5

m. I feel "emotionally attached" to the Army 1 2 3 4 5

n. One of the problems of leaving the Army would be the lack of good alternatives 1 2 3 4 5

16. Since arriving at your present Army post, did you get into any serious trouble (UCMJ offenses)?

○ No
○ Yes, just once
○ Yes, two or three times
○ Yes, four or more times

17. Since arriving at your present Army post, have YOU been sexually harassed? MARK ONE.

No → GO TO Q. 21   Yes, 3 times
Yes, 1 time   Yes, 4 or more times
Yes, 2 times

THE NEXT THREE QUESTIONS ARE ABOUT THE SEXUAL HARASSMENT SITUATION WHICH HAD THE GREATEST EFFECT ON YOU.

18. Who sexually harassed YOU? MARK ONE.

An officer   A civilian employee
An NCO   of the Army
An enlisted person   Someone else
(not an NCO)

19. Was this person in your unit?   No   Yes

20. Did you report the sexual harassment incident to your chain of command or other military authority? MARK ONE.

Yes, but I am not aware of the results.
Yes, and something was done.
Yes, and nothing was done about it.
No, I handled it myself.
No, I didn't think anyone would do anything about it.
No, it was a minor incident and it didn't really bother me.
No, I was afraid of reprisals from the chain of command.

21. Since arriving at your present Army post, have you been subjected to discrimination? MARK ALL THAT APPLY.

No   Yes, national origin
Yes, racial   Yes, other
Yes, religious   (age, weight, etc.)
Yes, gender (sex)   PLEASE LIST BELOW.

_____

THE NEXT QUESTION IS ABOUT THE DISCRIMINATION SITUATION WHICH HAD THE GREATEST EFFECT ON YOU.

22. Did you report the discrimination incident to your chain of command or other military authority? MARK ONE.

Does not apply; I have not been subjected to discrimination.
Yes, but I am not aware of the results.
Yes, and something was done.
Yes, and nothing was done about it.
No, I handled it myself.
No, I didn't think anyone would do anything about it.
No, it was a minor incident and it didn't really bother me.
No, I was afraid of reprisals from the chain of command.

23. Since arriving at your present Army post, has military justice been administered fairly to you and your peers?

○ Yes
○ No
○ Don't know

24. Since arriving at your present Army post, was the most <u>severe</u> punishment for the <u>same type of offense</u> usually given to: MARK ALL THAT APPLY.

○ Does not apply; all are treated the same.
○ Men
○ Women
○ Whites
○ Blacks
○ Hispanics
○ Some other race/ethnic group (PLEASE LIST)

_____

25. Please indicate your level of satisfaction with the following aspects of Army life <u>at the present time</u>. MARK A RESPONSE FOR EACH.

Very satisfied
Satisfied
Neither satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

How satisfied are you with ...

a. your relationships with peers?........ ① ② ③ ④ ⑤
b. your relationships with non-commissioned officers? .... ① ② ③ ④ ⑤
c. your relationships with commissioned officers? .... ① ② ③ ④ ⑤
d. the Army's gender mix? .... ① ② ③ ④ ⑤
e. discipline? .... ① ② ③ ④ ⑤
f. barracks living?..................... ① ② ③ ④ ⑤
g. physical fitness training? .... ① ② ③ ④ ⑤
h. your amount of personal freedom? .... ① ② ③ ④ ⑤
i. the Army's structured, ordered lifestyle?........................... ① ② ③ ④ ⑤
j. the length of your enlistment contract? .... ① ② ③ ④ ⑤
k. your MOS? .... ① ② ③ ④ ⑤
l. the time available to pursue your personal life goals? .... ① ② ③ ④ ⑤
m. your life as an enlisted soldier?....... ① ② ③ ④ ⑤
n. being away from family and friends? .... ① ② ③ ④ ⑤
o. your personal and family life? .... ① ② ③ ④ ⑤

26. How much do you agree or disagree with the following statements about your most recent training unit?

Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree
Not applicable

a. The leaders in the unit set high standards for soldiers in terms of good behavior and discipline ...... ① ② ③ ④ ⑤ ⑥
b. The leaders in the unit were more interested in looking good than being good..................... ① ② ③ ④ ⑤ ⑥
c. I was impressed with the quality of leadership in the unit........... ① ② ③ ④ ⑤ ⑥
d. I would go for help with a personal problem to people in my chain of command .... ① ② ③ ④ ⑤ ⑥
e. The leaders in the unit were not concerned with the way soldiers treat each other as long as the job/training gets done .... ① ② ③ ④ ⑤ ⑥
f. The leaders in the unit were more interested in furthering their careers than in the well-being of their soldiers . ① ② ③ ④ ⑤ ⑥
g. Leaders in the unit treated soldiers with respect .... ① ② ③ ④ ⑤ ⑥
h. The leaders most always got willing and whole-hearted cooperation from the soldiers in the unit .... ① ② ③ ④ ⑤ ⑥
i. The NCOs in my chain of command were a good source of support for soldiers .... ① ② ③ ④ ⑤ ⑥

27. Suppose your drill sergeants were to compare your performance to other soldiers in your training company. How would they rate your ...

Truly exceptional (top 5%)
Outstanding (upper 15%)
Above average (upper 30%)
Average (middle 40%)
Below average (bottom 30%)

a. EFFORT (such as willingness to give your best effort and assist others to make sure the job gets done) .... ① ② ③ ④ ⑤
b. PERSONAL DISCIPLINE (such as willingness to follow Army regulations, orders, and Standard Operating Procedure, and display respect for superiors) .... ① ② ③ ④ ⑤
b. PHYSICAL FITNESS (effectiveness in maintaining military standards of physical fitness) .... ① ② ③ ④ ⑤
c. OVERALL EFFECTIVENESS IN MOST RECENT TRAINING .... ① ② ③ ④ ⑤

28. From what you know and have heard about the Army and civilian life, please indicate how you believe conditions in the military are compared with conditions in a civilian job you could realistically expect to get. MARK A RESPONSE FOR EACH.

	Much better in Army	Somewhat better in Army	About the same	Somewhat better in civilian life	Much better in civilian life	Don't know
a. Pay	1	2	3	4	5	6
b. Retirement benefits	1	2	3	4	5	6
c. Benefits other than retirement	1	2	3	4	5	6
d. Assistance for civilian education	1	2	3	4	5	6
e. Opportunities to advance in your chosen field	1	2	3	4	5	6
f. Opportunities for job satisfaction	1	2	3	4	5	6
g. Quality of co-workers	1	2	3	4	5	6
h. Working hours/schedule	1	2	3	4	5	6
i. Time for personal/family life	1	2	3	4	5	6
j. Overall quality of life	1	2	3	4	5	6
k. Level of professionalism in the organization	1	2	3	4	5	6
l. Personal freedom	1	2	3	4	5	6
m. Job security	1	2	3	4	5	6
n. Total family income	1	2	3	4	5	6

29. The kind of work I enjoy most is available:

- ( ) only in the military.
- ( ) primarily in the military.
- ( ) equally in the military and civilian world.
- primarily in the civilian world.
- only in the civilian world.
- Don't know

30. Please indicate your level of agreement with using the Army for the following types of missions. MARK A RESPONSE FOR EACH.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a. Combat the flow of illegal drugs into the U.S.	1	2	3	4	5
b. Provide humanitarian relief in the U.S. in areas hit by a major disaster	1	2	3	4	5
c. Provide humanitarian relief outside the U.S. (such as Bosnia, Somalia, Rwanda, Haiti)	1	2	3	4	5
d. Be part of a United Nations peace-keeping force wherever needed	1	2	3	4	5
e. Combat terrorism which threatens U.S. citizens	1	2	3	4	5
f. Maintain a military presence in overseas areas of vital interest to the U.S. in order to prevent problems	1	2	3	4	5
g. Provide training to federal, state, and other public employees	1	2	3	4	5

31. How confident are you that you will: MARK A RESPONSE FOR EACH.

	Extremely Confident	Very Confident	Moderately Confident	Slightly Confident	Not Confident At All
a. Adapt to Army life	1	2	3	4	5
b. Complete your term of obligation	1	2	3	4	5
c. Meet the Army's physical requirements	1	2	3	4	5
d. Have the skills to perform well in your next assignment	1	2	3	4	5
e. Earn promotions in the Army	1	2	3	4	5

32. How important is each of the following TO YOU PERSONALLY?

	Extremely important	Very important	Quite important	Moderately important	Somewhat important	Slightly important	Not at all important
a. Loyalty to the United States Army	1	2	3	4	5	6	7
b. Loyalty to your unit or organization	1	2	3	4	5	6	7
c. Taking responsibility for your actions and decisions	1	2	3	4	5	6	7
d. Putting what is good for your fellow soldiers, unit, and the nation before your own welfare	1	2	3	4	5	6	7
e. Dedication to serving the United States, even to risking your own life in its defense	1	2	3	4	5	6	7
f. Commitment to working as a member of a team	1	2	3	4	5	6	7
g. Dedication to learning your job and doing it well	1	2	3	4	5	6	7
h. Personal drive to succeed in your work and advance	1	2	3	4	5	6	7
i. Being honest, open, and truthful	1	2	3	4	5	6	7
j. Being disciplined and courageous in battle	1	2	3	4	5	6	7
k. Standing up for what you firmly believe is right	1	2	3	4	5	6	7
l. Working with others tactfully and with military courtesy	1	2	3	4	5	6	7
m. Exhibiting excellent military bearing and appearance	1	2	3	4	5	6	7
n. Equal opportunity regardless of gender	1	2	3	4	5	6	7
o. High moral standards both on-duty and off-duty	1	2	3	4	5	6	7
p. Building and maintaining physical fitness and stamina	1	2	3	4	5	6	7

33. As you see it now, how well do your personal values match the values of the Army?

- ○ Extremely well
- ○ Very well
- ○ Neither well nor poorly
- ○ Poorly
- ○ Not at all

34. As you see it now, to what extent are you the type of individual that the Army wants as a soldier?

- ○ Very great extent
- ○ Great extent
- ○ Moderate extent
- ○ Slight extent
- ○ Not at all

35. Assume you were to leave the Army in the next six months. Which of the following reasons would likely apply in your case? RESPOND TO EACH ITEM.

Not Likely to Apply

Likely to Apply

a. Failure to meet physical requirements	○	○
b. Problems adjusting to Army life	○	○
c. Family problems at home	○	○
d. Pregnancy	○	○
e. One or more serious (UCMJ) offenses	○	○
f. Minor offenses or disciplinary problems	○	○
g. Poor academic performance	○	○
h. Illness/medical condition	○	○
i. Homesickness	○	○
j. Lack of motivation, boredom	○	○
k. Problems with supervisors	○	○
l. Racial discrimination	○	○
m. Sexual or gender discrimination	○	○
n. Better job opportunities outside the Army	○	○
o. Injuries sustained during training	○	○
p. Not getting desired military job	○	○
q. Sexual harassment	○	○
r. Not getting along with others	○	○
s. Maintaining weight standards	○	○
t. Drug/alcohol abuse	○	○
u. Mental health problems	○	○
v. Unfair punishment	○	○
w. Verbal abuse from training staff members	○	○

36. At the present time, what level of strain, conflict or stress -- if any -- are you experiencing?

- ○ Very high
- ○ High
- ○ Moderate
- ○ Low
- ○ Very low
- ○ None

37. How would you rate your current level of morale?

- ○ Very high
- ○ High
- ○ Moderate
- ○ Low
- ○ Very low

38. Considering both your own qualifications and current labor market conditions, how difficult do you think it would be for you to find a good civilian job right now?

- ○ Very difficult
- ○ Difficult
- ○ Not particularly difficult or easy
- ○ Easy
- ○ Very easy
- ○ Does not apply; I already have a good civilian job

39. My personal or family situation would make it difficult for me to leave the Army in the next year or so.

- ○ Strongly agree
- ○ Agree
- ○ Neither agree nor disagree
- ○ Disagree
- ○ Strongly disagree

40. A male friend who you think is qualified asks your advice about joining the Army. Would you recommend that he ...

- ○ join the Army?
- ○ join another military service?
- ○ not join a military service?

41. A female friend who you think is qualified asks your advice about joining the Army. Would you recommend that she ...

- ○ join the Army?
- ○ join another military service?
- ○ not join a military service?

42. Are you:

- ○ Male
- ○ Female

43. Are you of Hispanic/Spanish origin or ancestry (of any race)?

- ○ No
- ○ Yes, Mexican, Mexican-American, Chicano
- ○ Yes, Puerto Rican
- ○ Yes, other Hispanic/Spanish

44. What is your racial background?

- ○ American Indian, Eskimo or Aleut
- ○ Asian or Pacific Islander
- ○ Black
- ○ White

45. What is your current marital status?

- ○ Married
- ○ Legally separated or filing for divorce
- ○ Single, never married
- ○ Single, engaged to be married
- ○ Divorced
- ○ Widowed

46. How many dependent children do you have (for whom you provide financial support)?

- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4 or more

47. Is there an important girlfriend/boyfriend in your life right now?

- ○ Does not apply; I am currently married
- ○ Yes
- ○ No

48. How supportive/unsupportive is your spouse/girlfriend/boyfriend of your making a career of the Army?

- ○ Does not apply; I do not have a spouse/girlfriend/boyfriend
- ○ Very supportive
- ○ Fairly supportive
- ○ Mixed or neutral
- ○ Fairly unsupportive
- ○ Very unsupportive

49. Did you finish high school?

- ○ No   ○ Yes. If yes, choose the credential(s) you earned when you finished high school. Fill in **at least one circle:**
  - ○ Diploma – earned from a public or private **traditional day school**
  - ○ Diploma – earned from an **adult (continuation)** school
  - ○ Diploma – issued by parents or tutors for **home schooling**
  - ○ Diploma – issued by an association, school, or state for **home schooling**
  - ○ Diploma – issued by a **vocational or technical** school
  - ○ Diploma – issued by a **correspondence** school
  - ○ **GED equivalency** diploma
  - ○ Certificate – for high school **attendance or completion**

50. Are you planning to go to college?

- ○ Yes, while on active duty during this enlistment
- ○ Yes, after I complete this term of duty
- ○ No
- ○ Undecided

51. How IMPORTANT TO YOU is it that you complete your enlistment obligation?

- ○ Extremely important
- ○ Very important
- ○ Moderately important
- ○ Slightly important
- ○ Not at all important

52. Which ONE of the following best describes your current active duty Army career intentions? MARK ONE.

- · PROBABLY stay until retirement
- · DEFINITELY stay until retirement
- · PROBABLY stay in beyond my present obligation, but not necessarily to retirement
- · DEFINITELY stay in beyond my present obligation, but not necessarily to retirement
- · PROBABLY leave upon completion of my present obligation
- · DEFINITELY leave upon completion of my present obligation
- · Does not apply; I am not active duty Army

53. How many years of active duty service do you <u>expect</u> to have completed by the time you leave the Army? (Zero if no active duty)

0	0
1	1
2	2
3	3
	4
	5
	6
	7
	8
	9

54. Do any of the following cause you to be unsure about an Army career? MARK ALL THAT APPLY.

- · My lack of experience in the Army
- · My career goals are unclear
- · Unsure of chances for promotion
- · Changes in Army job opportunities
- · Changes in the Army mission
- · Possibility of being subjected to sexual or racial discrimination
- · None of the above

55. Enter your Social Security Number below.

			–			–				
0	0	0		0	0		0	0	0	0
1	1	1		1	1		1	1	1	1
2	2	2		2	2		2	2	2	2
3	3	3		3	3		3	3	3	3
4	4	4		4	4		4	4	4	4
5	5	5		5	5		5	5	5	5
6	6	6		6	6		6	6	6	6
7	7	7		7	7		7	7	7	7
8	8	8		8	8		8	8	8	8
9	9	9		9	9		9	9	9	9

SOLDIER EXIT SURVEY

The **Soldier Exit Survey** is part of a research project to evaluate the attitudes and experiences of enlisted personnel during their careers in the United States Army. In this project, the U.S. Army Research Institute (ARI) will assess the expectations and impressions of new recruits, soldiers completing training, and personnel exiting the Army. The project covers a wide range of issues related to soldiers' jobs, careers, and the Army as a whole. The overall purpose is to provide senior Army leaders information for recruiting, training, and retaining a high quality force of soliders.

Thank you for your support for this survey program.

PRIVACY ACT STATEMENT

1. The Department of the Army may collect the information requested in this survey under the authority of 10 United States Code 2358. Providing information in this questionnaire is voluntary. Failure to respond to any specific question will not result in any penalty.

2. Public Law 93-573 (Privacy Act of 1974) requires that you be informed of the purpose and uses to be made of the information collected. The information collected in the survey will be used solely for research purposes. Your Social Security Number (SSN) is requested only for linking data files. Use of SSNs is authorized by Executive Order 9397. In accordance with federal regulations, the survey data will be safeguarded to protect your privacy. After we have used your SSN to create the data files, a new identification code will be created to replace your SSN. The file linking your SSN to the new ID code will be properly secured to preserve confidentiality. Only survey statisticians involved in collecting or preparing the information for analysis will have access to completed questionnaires. Only group statistics will be reported.

How to fill out this survey.

Read each question carefully and mark your answers directly on this form.

MARKING INSTRUCTIONS

- **Please use a No. 2 pencil.**
- **Please completely fill in the response as shown in example:**

    1. How did Army life compare with your expectations?

    ○ Much better than I expected
    ○ Somewhat better than I expected
    ● About the same as I expected
    ○ Somewhat worse than I expected
    ○ Much worse than I expected

---

1. Enter today's date (MM/DD/YYYY):

M M	D D	Y Y Y Y

0 0 - 0 0 - 0 0 0 0
1 1   1 1   1 1 1 1
2   2 2   2 2 2 2
3   3 3   3 3 3 3
4   4   4 4 4 4
5   5   5 5 5 5
6   6   6 6 6 6
7   7   7 7 7 7
8   8   8 8 8 8
9   9   9 9 9 9

2. How did Army life compare with your expectations?

○ Much better than I expected
○ Somewhat better than I expected
○ About the same as I expected
○ Somewhat worse than I expected
○ Much worse than I expected

3. Overall, how SATISFIED were you with the following elements of your Army experience?

> Very Dissatisfied
> Dissatisfied
> Neither
> Satisfied
> Very Satisfied
> Not Applicable

a. Your recruiter . . . . ① ② ③ ④ ⑤ ⑥

b. Delayed Entry Program (DEP) . . . . . ① ② ③ ④ ⑤ ⑥

c. Military Entrance Processing
   Station (MEPS) . . . . ① ② ③ ④ ⑤ ⑥

d. Reception Station . . . . ① ② ③ ④ ⑤ ⑥

e. Basic Training/OSUT . . . . ① ② ③ ④ ⑤ ⑥

f. Drill Sergeant . . . . ① ② ③ ④ ⑤ ⑥

g. Advanced Individual Training . . . . . . ① ② ③ ④ ⑤ ⑥

h. MOS/Duty Assignment . . . . ① ② ③ ④ ⑤ ⑥

4. How does your health compare now to what it was when you first entered the Army?

○ Much better now
○ Somewhat better now
○ About the same as it was
○ Somewhat worse now
○ Much worse now

5. To what extent was each of the following a reason for your leaving the Army?

> Not At All
> Slight Extent
> Moderate Extent
> Great Extent
> Very Great Extent

a. Failure to meet physical
   requirements . . . . ① ② ③ ④ ⑤

b. Problems adjusting to Army life . . . . . . ① ② ③ ④ ⑤

c. Family problems at home . . . . ① ② ③ ④ ⑤

d. Pregnancy . . . . ① ② ③ ④ ⑤

e. One or more serious (UCMJ)
   offenses . . . . ① ② ③ ④ ⑤

f. Minor offenses or disciplinary
   problems . . . . ① ② ③ ④ ⑤

g. Poor academic performance . . . . ① ② ③ ④ ⑤

h. Illness/medical condition . . . . ① ② ③ ④ ⑤

i. Homesickness . . . . ① ② ③ ④ ⑤

j. Lack of motivation, boredom . . . . ① ② ③ ④ ⑤

k. Problems with supervisors . . . . ① ② ③ ④ ⑤

l. Racial discrimination . . . . ① ② ③ ④ ⑤

m. Sexual or gender discrimination . . . . . . ① ② ③ ④ ⑤

n. Better job opportunities outside
   the Army . . . . ① ② ③ ④ ⑤

o. Injuries sustained during training . . . . . ① ② ③ ④ ⑤

p. Not getting desired military job . . . . ① ② ③ ④ ⑤

q. Sexual harassment . . . . ① ② ③ ④ ⑤

r. Not getting along with others . . . . ① ② ③ ④ ⑤

s. Maintaining weight standards . . . . ① ② ③ ④ ⑤

t. Drug/alcohol abuse . . . . ① ② ③ ④ ⑤

u. Mental health problems . . . . ① ② ③ ④ ⑤

v. Unfair punishment . . . . ① ② ③ ④ ⑤

w. Verbal abuse from training staff
   members . . . . ① ② ③ ④ ⑤

6. To what extent would each of the following have helped you complete your term of enlistment?

Not At All
Slight Extent
Moderate Extent
Great Extent
Very Great Extent

a. Obtain more complete and accurate
prior service medical information . . . . . ① ② ③ ④ ⑤

b. Improve counseling to soldiers
having difficulty adjusting to Army
life and discipline . . . . ① ② ③ ④ ⑤

c. Provide more realistic descriptions
of Army life before entering the Army . . ① ② ③ ④ ⑤

d. Make physical fitness training prior
to entering the Army more rigorous . . . ① ② ③ ④ ⑤

e. Provide information to parents,
guardians, or spouses on how to
support trainees and lessen
homesickness . . . . ① ② ③ ④ ⑤

f. Maintain fair standards for discipline,
treatment, and privileges across all
training units . . . . ① ② ③ ④ ⑤

g. Collect confidential feedback
regularly from trainees about the
performance of drill sergeants/
training instructors . . . . ① ② ③ ④ ⑤

h. Increase the amount of respect and
consideration shown recruits . . . . ① ② ③ ④ ⑤

i. Provide more incentives or rewards
for good performance for trainees . . . . ① ② ③ ④ ⑤

j. Make clear the full value of Army
benefits and compensation . . . . ① ② ③ ④ ⑤

7. How do you feel about leaving the Army before your current obligation is completed?
○ Very good
○ Good
○ Neither good nor bad
○ Bad
○ Very bad

8. How satisfied are you with the training you have received since you entered the Army?
○ Very satisfied
○ Satisfied
○ Neither satisfied nor dissatisfied
○ Dissatisfied
○ Very dissatisfied

9. What kind of discharge from the Army will you receive?
○ Honorable
○ Under Honorable Conditions
○ Other Than Honorable
○ Bad Conduct
○ Other – PLEASE SPECIFY:
_____
○ Don't know

10. How will early release from the Army affect your ability to achieve your career goals?
○ Strong positive effect
○ Positive effect
○ No effect
○ Negative effect
○ Strong negative effect
○ No basis to judge

11. If a male asked your advice about joining the Army, would you recommend that he . . . (MARK ONE)
○ join the Army?
○ join another military service?
○ not join a military service?

12. If a female asked your advice about joining the Army, would you recommend that she . . . (MARK ONE)
○ join the Army?
○ join another military service?
○ not join a military service?

13. Enter your Social Security Number below.

		–		–			
⓪ ⓪ ⓪		⓪ ⓪		⓪ ⓪ ⓪ ⓪			
① ① ①		① ①		① ① ① ①			
② ② ②		② ②		② ② ② ②			
③ ③ ③		③ ③		③ ③ ③ ③			
④ ④ ④		④ ④		④ ④ ④ ④			
⑤ ⑤ ⑤		⑤ ⑤		⑤ ⑤ ⑤ ⑤			
⑥ ⑥ ⑥		⑥ ⑥		⑥ ⑥ ⑥ ⑥			
⑦ ⑦ ⑦		⑦ ⑦		⑦ ⑦ ⑦ ⑦			
⑧ ⑧ ⑧		⑧ ⑧		⑧ ⑧ ⑧ ⑧			
⑨ ⑨ ⑨		⑨ ⑨		⑨ ⑨ ⑨ ⑨			

14. In your own words, why are you leaving the Army?

_____
_____
_____
_____
_____
_____

BCT Performance Record

RED Phase

Part I Basic Data

Social Security No.

(bubble grid 0–9 for SSN)

Part III Physical Fitness

Diagnostic Army Physical Fitness Test 1 Soldier Score

Push-up   Sit-up   Run

(bubble grids 0–9)

Diagnostic Army Physical Fitness Test 2 Soldier Score

Push-up   Sit-up   Run

(bubble grids 0–9)

Part IV Army Values

EXCELLENT GOOD FAIR POOR

○ ○ ○ ○ Loyalty
○ ○ ○ ○ Duty
○ ○ ○ ○ Respect
○ ○ ○ ○ Selfless Service
○ ○ ○ ○ Honor
○ ○ ○ ○ Integrity
○ ○ ○ ○ Personal Courage

Part V Motivation & Discipline

EXCELLENT GOOD FAIR POOR

○ ○ ○ ○ Personal Appearance
○ ○ ○ ○ Follows Orders & Directions
○ ○ ○ ○ Puts Forth Maximum Effort
○ ○ ○ ○ Obeys Policies
○ ○ ○ ○ Renders Military Courtesy
○ ○ ○ ○ Follows Buddy System Always
○ ○ ○ ○ Prepares for Inspections
○ ○ ○ ○ Maintains Equipment Accountability
○ ○ ○ ○ Team Player

Part VI RED Phase Completion Certification

Soldier achieved standards to move to next phase

○ Yes   ○ No   ○ Marginal

BLUE Phase

Part III Physical Fitness

Record Army Physical Fitness Soldier Score

Push-up   Sit-up   Run

(bubble grids 0–9)

Army Physical Fitness Re-Test Soldier Score

Push-up   Sit-up   Run

(bubble grids 0–9)

Part IV Army Values

EXCELLENT GOOD FAIR POOR

○ ○ ○ ○ Loyalty
○ ○ ○ ○ Duty
○ ○ ○ ○ Respect
○ ○ ○ ○ Selfless Service
○ ○ ○ ○ Honor
○ ○ ○ ○ Integrity
○ ○ ○ ○ Personal Courage

Part V Motivation & Discipline

EXCELLENT GOOD FAIR POOR

○ ○ ○ ○ Personal Appearance
○ ○ ○ ○ Follows Orders & Directions
○ ○ ○ ○ Puts Forth Maximum Effort
○ ○ ○ ○ Obeys Policies
○ ○ ○ ○ Renders Military Courtesy
○ ○ ○ ○ Follows Buddy System Always
○ ○ ○ ○ Prepares for Inspections
○ ○ ○ ○ Maintains Equipment Accountability
○ ○ ○ ○ Team Player

Part VI BLUE Phase Graduation Certification

Soldier achieved graduation standards

○ Yes   ○ No   ○ Marginal

R15135-PFI-54321

Appendix B

Designing and Planning a Comprehensive Investigation
of Enlisted Attrition Across the First-Term Life Cycle

Sampling Plan

by
John C. Helmick
Westat

Introduction

The initial focus of the survey data collection effort was the fiscal year (FY) 1999 half-Cohort. This FY 99 half-Cohort is described as all non-prior service (NPS) accessions entering the Army (thru the Army reception battalions) during the period January 1, 1999 thru June 30, 1999. The survey data collection period was subsequently extended to August 31, 1999. It was originally planned that all members of the FY 99 half-Cohort would be surveyed when they:

- Entered the Army (i.e., at their respective reception battalions);

- Completed Basic Combat Training (BCT);

- Completed One Station Unit Training (OSUT); and

- Left the Army (if they left the Army prior to completing their first term of enlistment).

It was also planned that a **sample** of the FY 99 half-Cohort would be surveyed:

- Upon completion of Advanced Individual Training (AIT); and

- In years: 2001, 2002, and 2003.

The research plan further called for all service members leaving the Army between January 1, 1999 and December 31, 2003 to be surveyed. It should be noted that we were only interested in administering an "exit" survey to those soldiers departing prior to completing their first term of service. It was thought however, that it would be easier to control the logistics of survey administration if all departing soldiers were surveyed upon leaving the Army. Our plan was to include the exit survey as part of the individual installation clearance record and to administer the survey at an installation out-processing facility (e.g., Army Career and Alumni Program, ACAP, processing center).

The initial sampling plan proposed to accomplish the above requirements called for a large random sample of entry-level personnel stratified by BCT, OSUT, and AIT. Members of this sample would be tracked and surveyed throughout their first term of enlistment.

In discussing the data collection effort associated with this sampling approach, it became apparent that the approach would have to be modified. The data collection resources necessary to support this approach were not going to be available. The random sampling approach gave way to one involving a convenience sample. The convenience sample was designed with the objective of surveying as many first term soldiers that a limited number of site visits would allow. The process became one of selecting the minimum number of Army training installations and first term assignment locations that would yield the best cross section of first term soldiers to be surveyed.

Selection of Army Training Locations

Selection of the Army training locations was accomplished through an analysis of data provided by the Army Training Requirement and Resources System (ATRRS). ATRRS maintains a database of course information on virtually every course that is taught by or for Army personnel at military and DoD training institutions. As part of the overall system for managing student input to training, ATRRS, among other things, is a reservation system that assigns incoming soldiers to "seats" within the Army initial entry training system. It is important to note that the data used in this analysis were Army training seat projections for BCT, OSUT and AIT, and although it is a close approximation, it is not an actual count of the number of soldiers trained.

Initial Army training is generally provided in two phases: Basic Combat Training (BCT), and Advanced Individual Training (AIT). AIT is the "job training" or training in a particular military occupation specialty (MOS). BCT lasts 9 weeks. Upon completion of BCT the soldiers move on to their Advanced Individual Training (AIT). Depending on the MOS, AIT can last from 4 to 52 weeks. For selected (mostly combat) MOS, training is conducted in a One Station Unit Training (OSUT) format, where the BCT and AIT are combined. The soldier remains at the same location and in the same training unit for the duration of OSUT. OSUT lasts from 12 to 18 weeks depending upon the MOS.

Basic Combat Training is conducted at 5 Army installations within the continental United States. OSUT is conducted at 5 Army installations. Of the 5 OSUT locations, 4 are also BCT locations. AIT training for Army MOS is conducted at 23 locations. Of these 23 locations, 16 are Army, 3 are Air Force, 3 are Navy, and 1 is Coast Guard. ATRRS data for those soldiers (Army, Non-Prior Service accessions) entering training during the period January 1, 1999 thru June 30, 1999, showed a total of 86,758 training seats for BCT, OSUT, and AIT across 25 military training locations. Table B-1 lists the number of training seats for each type of training (i.e., BCT, OSUT, AIT) at each location.

Because BCT and OSUT are conducted at a relatively small number of locations, and account for a large number of soldiers, it was decided that data collection would be conducted at all BCT locations and all OSUT locations. The decision to collect data at all the BCT and OSUT training locations provided the opportunity to survey all 58,424 soldiers (45,658 BCT soldiers, and 12,766 OSUT soldiers) in the FY 99 half Cohort. All soldiers would be surveyed at the beginning and end of BCT, and at the beginning and end of OSUT. Any soldiers that "dropped out" of BCT or OSUT would also be surveyed.

Table B-1. Training Locations for Army Initial Entry Training

| | Type of Training | | | | |
Location	BCT (seats)	OSUT (seats)	AIT (seats)	Total (seats)	Number of MOS
Army Locations					
Ft. Jackson, SC	19,680		4,447	24,127	10
Ft. Leonard Wood, MO	8,020	1,832	2,608	12,460	11
Ft. Sill, OK	8,160	1,328	1,562	11,050	9
Ft. Benning, GA	5,100	4,868		9,968	4
Ft. Knox, KY	4,698	2,502	614	7,814	6
Ft. McClellan, AL		2,236		2,236	3
Ft. Lee, VA			4,441	4,441	10
Ft. Gordon, GA			3,369	3,369	18
Ft. Sam Houston, TX			2,744	2,744	14
Aberdeen Proving Ground, MD			2,706	2,706	14
Ft. Eustis, VA			1,904	1,904	17
Ft. Huachuca, AZ			1,020	1,020	10
Ft. Bliss, TX			573	573	6
Redstone Arsenal, AL			559	559	9
Ft. Rucker, AL			372	372	4
Ft. Meade, MD			200	200	5
Ft. Bragg, NC			146	146	2
Ft. Belvoir, VA			91	91	3
Total Army Locations	45,658	12,766	27,356	85,780	155
Air Force Locations					
Sheppard Air Force Base, TX			294	294	5
Goodfellow Air Force Base, TX			282	282	2
Keesler Air Force Base, MI			30	30	1
Total Air Force Locations			606	606	8
Navy Locations					
Gulfport Naval Constr. Bn. Cntr, MI			225	225	2
Pensacola Naval Air Station, FL			66	66	1
USAESOM, Dam Neck FCTC, VA			56	56	13
Total Navy Locations			347	347	16
Coast Guard Locations					
Yorktown Coast Guard RTC, VA			25	25	1
Total Coast Guard Locations			25	25	1
Grand Total	45,658	12,766	28,334	86,758	180

The ATRRS data listed 180 entry-level MOS where the initial entry training was conducted as either OSUT (a combination of BCT and AIT) or AIT. Data collection at the BCT and AIT training locations would provide coverage of 43 MOS (12 OSUT, and 31 AIT) and 21,997 soldiers. Non-Army locations, where it was decided data would not be collected, accounted for 25 MOS (978 soldiers). Training locations for the remaining 112 MOS (18,125 soldiers) were spread across 12 Army installations.

It was felt that the logistics of the data collection effort could sustain operations at no more than 11 locations. Since the BCT and OSUT locations accounted for 6 installations, the task became one of selecting 5 more Army training locations from the remaining 12 that would provide the best coverage of the remaining 112 MOS. In general the selection process became one of choosing the 5 installations which would provide the best coverage in terms of the total number of soldiers to be surveyed and the number of MOS represented. Table B-2 provides a listing of the Army training locations selected as data collection sites.

Representativeness of the Training Sample

These 11 data collection sites provide the best coverage of the total number of soldiers scheduled for training (i.e., BCT, OSUT, and AIT) and include a good representation of the entry-level MOS. This coverage includes:

- All 45,658 soldiers scheduled for BCT;

- All 12,766 soldiers scheduled for OSUT;

- Covering 24,395 (86%) of the 28,334 soldiers scheduled for AIT; and

- Covering 116 (64%) of the 180 entry-level MOS.

If the non-Army training locations are excluded from the totals, the coverage becomes: 24,395 (89%) of the 27,356 soldiers scheduled for AIT (at Army training locations); and 116 (75%) of the 155 entry-level MOS.

The Army groups related MOS into 31 Career management Fields (CMF). Each CMF is a grouping of related MOS and has the following characteristics:

- The MOS in any CMF are so related that soldiers serving in one MOS have the potential abilities and aptitude for training and assignment for most of the other MOS within the CMF.

- The CMF provides a visible and logical progression form entry into the training base to retirement in grade E9.

- The career content of each CMF is supported by annual first-term (training) input. This provides the number of first term soldiers needed to replenish losses from the career force in the CMF.

Table B-2. Army Training Locations Selected for Data Collection

Location	Type of Training			Total (seats)	Number of MOS
	BCT (seats)	OSUT (seats)	AIT (seats)		
Army Locations					
Ft. Jackson, SC	19,680		4,447	24,127	10
Ft. Leonard Wood, MO	8,020	1,832	2,608	12,460	11
Ft. Sill, OK	8,160	1,328	1,562	11,050	9
Ft. Benning, GA	5,100	4,868		9,968	4
Ft. Knox, KY	4,698	2,502	614	7,814	6
Ft. McClellan, AL		2,236		2,236	3
Ft. Lee, VA			4,441	4,441	10
Ft. Gordon, GA			3,369	3,369	18
Ft. Sam Houston, TX			2,744	2,744	14
Aberdeen Proving Ground, MD			2,706	2,706	14
Ft. Eustis, VA			1,904	1,904	17
Total	45,658	12,766	24,395	82,819	116

Table B-3 provides a listing of the 31 Army Career Management Fields (CMF) and includes the number of military occupational specialties (MOS) in each CMF. Of the 29 entry-level CMF (CMF 18, Special Forces and CMF 79, Recruiting, do not contain entry-level MOS), 17 CMF are represented by the MOS included in the data collection sample. Except for CMF 97 (Bands), most of the CMF not represented are those with only a few MOS, or contain MOS with a relatively small number of soldiers scheduled for training.

Selection of First Term Assignment Locations

Collecting data from soldiers at their first unit of assignment was subject to logistical constraints similar to those of collecting data at the training locations. Planning of the collection of data at the first unit of assignment was limited to the portion of the 1999 Cohort assigned to the 47 locations or installations within the United States (including Hawaii, Alaska, Panama and Puerto Rico), referred to here as "CONUS" installations. These installations include 69% of all Active Army Skill Level 1 soldiers worldwide. Rather than randomly select a specific number of locations (from the 47) it was decided to select the minimum number of locations that would provide access to the greatest number of soldiers and the best representation across the MOS included in the study.

Data from the Army Enlisted Master File (EMF), as of March 30, 1999, listed the number of entry-level MOS job positions for each study MOS at 47 Army locations. Data from each installation were evaluated to determine which locations, or combinations of locations, would

Table B-3.   Army Career Management Fields (CMF)

CMF	Description	Entry level (ATRRS)	Included in research
		Number of MOS	
11	Infantry	4	4
12	Combat Engineering	2	2
13	Field Artillery	9	9
14	Air Defense Artillery	6	0
25	Visual Information	3	0
18	Special Forces	0	0
19	Armor	2	2
31	Signal Operations	7	7
33	Electronic Warfare/Intercept Syst Maint	1	0
35	Electronic Maintenance and Calibration	16	8
37	Psychological Operations	1	0
38	Civil Affairs (Reserve Component Only)	1	0
46	Public Affairs	2	0
51	General Engineering	12	7
54	Chemical	1	1
55	Ammunition	2	0
63	Mechanical Maintenance	21	21
67	Aircraft Maintenance	15	12
71	Administration	8	8
74	Information Systems Operations	3	3
77	Petroleum and Water	3	3
79	Recruiting and Retention	0	0
81	Topographic Engineering	3	0
88	Transportation	6	6
91	Medical	17	14
92	Supply and Services	7	7
93	Aviation Operations	2	0
95	Military Police	2	2
96	Military Intelligence	7	0
97	Bands	13	0
98	Signals Intelligence/Electronic Warfare Opns	4	0
	Total	180	116

provide the best representation across each of the MOS, and access to the greatest total number of soldiers (based on the total number of soldiers, across the MOS and locations included in the research). Because of the large number of MOS involved, MOS representation was based on achieving the greatest number of MOS with an entry-level job position population of 300 or more. The number of MOS (at the locations selected) that accounted for 50% or more of the total MOS population (represented by the 47 locations) was also a consideration in evaluating MOS representation.

To determine the minimum number of installations that would provide the best coverage of the MOS studied, the 47 installations were arrayed in a "priority" order, presented in Table B-4.. This "priority" order was based on the number of study MOS represented at the installation, and the number of Skill Level 1 soldiers in each of those MOS among those 47 installations. Of particular interest was the number of MOS that had a Skill Level 1 soldier population of 300 or greater. The ordering of the installations was determined by how well each incrementally contributed to the cumulative totals of the preceding installations in the priority list. Cumulative totals were based on: the total Skill Level 1 soldier population at these 47 installations; the number of MOS with a Skill Level 1 population of 300 or more; and the number of MOS where 50%, 75%, 80%, or 90% of the total MOS population would be represented.

The criteria used to select the minimum number of installations was based on the number of installations that would provide the best representation across each of the MOS, and access to the greatest total number of soldiers (based on the total number of CONUS soldiers, across the study MOS). MOS representation was based on the number of MOS with an entry-level job position population of 300 or more as well as the number of MOS (at the locations selected) that accounted for 50% or more of the total MOS population (represented by the 47 locations). Access to the greatest number of soldiers was evaluated in terms of what percent of the total number of CONUS soldiers (i.e., 118,044) would be covered by the installations selected.

By applying the above MOS representation and soldier access criteria to Table B-4 we determined that the minimum number of installations that would provide the best coverage is 25. In referring to Table B-4, this would be the first 25 installations on the list (Ft. Hood through Ft. Leavenworth, Kansas). Selecting these 25 installations achieves the following coverage:

- 60 study MOS with a Skill Level 1 soldier population of 300 (60 is the most possible);

- 97.5% of the total Skill Level 1 target population assigned to these 47 installations;

- 100 MOS where the Skill Level 1 population would be at least 75%;

- 99 MOS where the Skill Level 1 population would be at least 80%; and

- 94 MOS where the Skill Level 1 population would be at least 90%.

Table B-4. Installtion by Order of Priority

Ft Hood, TX
Ft Bragg, NC
Ft Gordon, GA
Ft Campbell, KY
Ft Sill, OK
Ft Jackson, SC
Ft Eustis, VA
Ft Carson, CO
Ft Sam Houston, TX
Ft Leonard Wood, MO
Ft Benning, GA
Ft Stewart, GA
Ft Lewis, WA
Ft Drum, NY
Ft Riley, KS
Schoefield Barracks, HI
Ft Lee, VA
Ft Irwin, CA
Ft Huachua, AZ
Ft Bliss, TX
Ft Richardson, AK
Ft Monmouth, NJ
Ft Belvoir, VA
Ft Meade, MD
Ft Leavenworth, KS
Ft Myer, VA
Ft Detrick, MD
Ft McPherson, GA
Ft Shafter, HI
Ft Clayton, Panama
Ft McClellan, AL
Ft Greely, AK
Ft Monroe, VA
Ft McNair, DC
Ft Hamilton, NY
Ft Buchanan, PR
Ft Sheridan, IL
Ft Gillem, GA
Ft Devens, MA
Ft Dix, NJ
Ft Benjamin Harrison, IN
Ft A.P. Hill, VA
Ft Davis, Panama
Ft McCoy, WI
Ft Buckner, NY
Ft Baker, CA
Ft Snelling, MN

**Designing and Planning a Comprehensive Investigation
of Enlisted Attrition Across the First Term Life Cycle**

Data Collection Plan

by
**Brian K. Waters
William J. Strickland**

Recruit Testing

General. Data collection using the Soldier Reception Survey (SRS) was conducted at Fort Benning, GA; Fort Jackson, SC; Fort Knox, KY; Fort Leonard Wood, MO; Fort McClellan, AL; and Fort Sill, OK. The SRS data collection period ran from early January 1999 through the end of August, 1999. (Fort McClellan received no new trainees after July 1999.) Surveys were administered by HumRRO teams of trained test administrators (TAs) located at each site. Each post had a Senior Test Administrator (STA) who managed the HumRRO local operations, served as local point-of-contact with post personnel, and coordinated directly with HumRRO's Data Collection Manager in Alexandria, Virginia.

Schedule. The specific schedule at each post was set based upon local situations. In general, testing was planned to occur on Saturdays and/or Sundays. The basic structure anticipated was one or more testing sessions each Saturday morning, Saturday afternoon, and/or Sunday afternoon. The number of sessions per weekend depended upon recruit flow, testing room capacity, and specific post constraints. Sessions were generally scheduled to last for 2 hours.

Procedure. Procedure called for surveys to be administered to all available active duty receptees, with Army Reserve and Army National Guard recruits tested on a space-available basis. As a practical matter, all recruits arriving at the survey location—Active, Guard, or Reserve—received the surveys.

Recruit Flow Rate. Table C-1 shows the number of Soldier Reception Surveys administered at each site.

Table C-1. Recruit Flows

Week Ending	AG BN / BCT-OSUT Start						AG BN / Start BCT Weekly Totals	Cumulative Totals
	Ft. Benning	Ft. Jackson	Ft. Knox	Ft. McClellan	Ft. Sill	Ft. Leonard Wood		
1/2/1999	0	0	0	0	142	0	142	142
1/9/1999	445	176	354	110	220	375	1,680	1,822
1/16/1999	225	257	0	125	148	200	955	2,777
1/23/1999	672	63	454	0	295	199	1,683	4,460
1/30/1999	251	233	113	93	46	347	1,083	5,543
2/6/1999	262	329	108	127	298	163	1,287	6,830
2/13/1999	254	488	145	109	92	378	1,466	8,296
2/20/1999	143	182	120	93	139	175	852	9,148
2/27/1999	217	190	0	67	0	352	826	9,974
3/6/1999	126	315	0	122	104	116	783	10,757
3/13/1999	185	476	217	86	185	347	1,496	12,253
3/20/1999	45	378	71	52	166	151	863	13,116
3/27/1999	239	361	45	118	280	283	1,326	14,442
4/3/1999	260	486	230	0	51	48	1,075	15,517
4/10/1999	259	272	0	0	247	106	884	16,401
4/17/1999	118	374	0	92	71	222	877	17,278
4/24/1999	188	549	0		78	129	944	18,222
5/1/1999	174	303	0		80	272	829	19,051
5/8/1999	246	369	219		133	135	1,102	20,153
5/15/1999	251	157	233		97	350	1,088	21,241
5/22/1999	317	444	76		154	198	1,189	22,430
5/29/1999	476	468	297		198	592	2,031	24,461
6/5/1999	823	440	588		594	796	3,241	27,702
6/12/1999	729	392	553		378	795	2,847	30,549
6/19/1999	459	339	419		270	675	2,162	32,711
6/26/1999	752	335	262		377	680	2,406	35,117
7/3/1999	616	142	96		289	458	1,601	36,718
7/10/1999	420	278	281		489	625	2,093	38,811
7/17/1999	514	672	385		242	263	2,076	40,887
7/24/1999	512	424	440		515	398	2,289	43,176
7/31/1999	583	628	76		241	582	2,110	45,286
8/7/1999	591	340	215		462	437	2,045	47,331
8/14/1999	527	645	454		21	670	2,317	49,648
8/21/1999	568	437	358		426	604	2,393	52,041
8/28/1999	651	359	292		239	438	1,979	54,020
9/4/1999			13				13	54,033

End of Training Testing

     General. Data collection using the End of Training Survey (EOT) was conducted at the same six installations conducting recruit testing. In addition, EOT testing was conducted at Fort Eustis, VA; Fort Gordon, GA; Fort Lee VA; Fort Sam Houston, TX; and Aberdeen Proving Ground. The EOT data collection period began in March 1999 and will continue through December 1999. (Fort McClellan graduated no trainees after July 1999.) Surveys were administered by HumRRO teams of trained test administrators (TAs) located at each site. Each post had a Senior Test Administrator (STA) who managed the HumRRO local operations, served as local point-of-contact with post personnel, and coordinated directly with HumRRO's Data Collection Manager in Alexandria, Virginia.

     Schedule. The specific schedule at each post was set based upon local situations. In general, testing was planned to occur on Saturdays and/or Sundays. The basic structure anticipated was one or more testing sessions each Saturday morning, Saturday afternoon, and/or Sunday afternoon. The number of sessions per weekend depended upon recruit flow, testing room capacity, and specific post constraints. Sessions were generally scheduled to last for 1 hour.

     Procedure. Procedure called for surveys to be administered to all available active duty training graduates, with Army Reserve and Army National Guard recruits tested on a space-available basis. As a practical matter, all soldiers arriving at the survey location—Active, Guard, or Reserve—received the surveys.

     Graduate Flow Rate. Table C-2 shows the number of End of Training Surveys administered (or planned) at each site.

Table C-2. Graduate Flows

Week Ending	BCT End/AIT Start — Ft Benning (Non-OSUT)	Ft Jackson (All)	Ft Knox (Non-OSUT)	Ft McClellan (OSUT Only)	Ft Sill (Non-OSUT)	FL L Wood (Non-OSUT)	End BCT-EOT Week Totals	Cumulative Totals	AIT/OSUT End — Ft Benning (OSUT & AIT)	Ft Jackson (AIT Only)	Ft Knox (OSUT & AIT)	Ft McClellan (OSUT)	Ft Sill (OSUT & AIT)	Ft Leonard Wood (OSUT & AIT)	Aberdeen Proving Grounds (AIT)	Ft Eustis (AIT)	Ft Gordon (AIT)	FL Lee (AIT)	Ft Sam Houston (AIT)	End AIT/OSUT Weekly Totals	Cumulative Totals
1/2/99							0	0												0	0
1/9/99							0	0												0	0
1/16/99							0	0												0	0
1/23/99							0	0												0	0
1/30/99							0	0												0	0
2/6/99							0	0												0	0
2/13/99							0	0												0	0
2/20/99							0	0												0	0
2/27/99							0	0												0	0
3/6/99							0	0												0	0
3/13/99							0	0												0	0
3/20/99		741	0		134	0	875	875												0	0
3/27/99		543	229		0	0	772	1,647												0	0
4/3/99		492	398		0	0	890	2,537												0	0
4/10/99			0		192	0	192	2,729												0	0
4/17/99		638	122		69	254	1,083	3,812	0	0	20	0	36	172	0	0	0	0	0	228	228
4/24/99			87		152	111	350	4,162	399	0	139	0	58	0	0	0	0	0	0	596	824
5/1/99			0		0	151	151	4,313	284	0	232	0	55	108	46	0	0	149	0	874	1,698
5/8/99		1,881	0		108	163	2,152	6,465	162	0	107	95	106	0	99	50	219	135	0	609	2,307
5/15/99			0		154	128	128	6,593	145	44	117	120	56	123	28	49	99	151	0	861	3,168
5/22/99			0		154	0	154	6,747	0	79	0	115	33	0	12	74	73	83	0	563	3,731
5/29/99			145		107	239	491	7,238	147	144	119	0	218	102	65	17	18	0	41	931	4,662
6/5/99		664	101		125	0	890	8,128	143	119	94	95	37	0	0	64	79	144	0	699	5,361
6/12/99		147	0		141	114	402	8,530	0	23	0	120	44	129	79	17	66	173	27	671	6,032
6/19/99		908	0		76	0	984	9,514	271	167	39	115	34	0	76	64	29	119	8	827	6,859
6/26/99		610	0		156	0	766	10,280	288	140	40	0	235	0	73	30	14	71	0	939	7,798
7/3/99	144		0		0	244	388	10,668	152	98	139	113	17	0	85	45	10	0	61	955	8,753
7/10/99	114	214	0		104	0	432	11,100	111	143	0	284	153	0	0	58	159	177	31	720	9,473
7/17/99	110		0		99	404	613	11,713	181	166	11	214	50	0	10	69	57	324	34	918	10,391
7/24/99	103	880	0		0	155	983	12,696	251	135	166	0	169	195	73	79	161	87	25	1,165	11,556
7/31/99	194	672	199		220	691	1,440	14,136	162	199	0	95	166	0	38	37	41	237	43	1,083	12,639
8/7/99	402		430		454	472	1,977	16,113	0	184	20		30	206	67	39	98	63	11	597	13,236
8/14/99	300		437		415	239	1,624	17,737	165	124	29		36	164	82	58	65	295	0	955	14,191
8/21/99	163	362	207		378	398	987	18,724	206	107	19		71	0	64	54	58	116	6	719	14,910
8/28/99	127	994	588		449	214	1,924	20,648	0	139	287		44	0	28	41	54	247	33	983	15,893
9/4/99	156	805	219		286	443	1,455	22,103	164	175	336		149	206	61	87	0	0	32	1,165	17,058
9/11/99	380	656	194		227	353	2,133	24,236	0	91	5		42	164	43	105	64	215	2	683	17,741
9/18/99	198	322	220		197	0	1,434	25,670	135	95	3		59	0	38	0	114	142	93	657	18,398
9/25/99	357	737	198		191	0	1,294	26,964	0	129	0		13	0	92	81	87	169	56	627	19,025
10/2/99	197	572	430		229	0	1,319	28,283	0	43	156		69	0	61	74	38	191	147	732	19,757
10/9/99	224		418		0	327	1,245	29,528	206	199	10		22	0	37	49	74	157	11	555	20,312
10/16/99	206		197			327	731	30,259	0	15	0		0	0	19	68	152	98	152	795	21,107
10/23/99	325	400	430				1,155	31,414	256	128	315		127	206	127	49	129	247	11	1,161	22,268
10/30/99	325	400	418				1,143	32,557	0	126	468		0	131	114	68	116	150	147	1,150	23,418
11/7/99	240		197				437	32,994	0	106	176		0	0	107	34	71	59	11	693	24,111
11/14/99	499		746				1,245	34,239	132	82	164		0	0	75	22	180	73	152	791	24,902
11/21/99	704		509				1,213	35,452	0	0	511		99	0	99	85	78	78	6	780	25,682
11/28/99	486		197				683	36,135	0	0	130		8	0	101	88	129	78	30	542	26,224
12/5/99	563		325				888	37,023	149	0	171		0	149	118	15	96	64	28	591	26,815
12/12/99	240		493				733	37,756	0	0	0		0	0	32	40	157	0	45	274	27,089

Exit Testing

General. Data collection using the Training Exit Survey (Exit) was conducted at all installations administering the End of Training Survey. The Exit data collection period began in March 1999 and continued through December 1999. (Fort McClellan graduated no trainees after July 1999.) Surveys were administered by Army Transition Center personnel, as part of routine out-processing for cohort members leaving the Army.

Schedule. The specific schedule at each post was set based upon local situations. In general, testing was planned to occur during routine out-processing from the installation as part of normal Army separation procedures.

Procedure. Procedure called for surveys to be administered to all cohort members leaving the Army before the expiration of their term of service.

Exit Flow Rate. Table C-3 shows the number of End of Training Surveys administered at each site up through 16 October 1999. Later administrations were not included in this report.

Table C-3. Exit Surveys Administered to Date

Week Ending	EXIT SURVEYS EXIT Surveys	Totals
4/11/1999	10	10
4/18/1999	289	299
4/25/1999	176	475
5/2/1999	237	712
5/9/1999	177	889
5/16/1999	295	1,184
5/23/1999	233	1,417
5/30/1999	214	1,631
6/5/1999	190	1,821
6/12/1999	157	1,978
6/19/1999	264	2,242
6/26/1999	230	2,472
7/3/1999	199	2,671
7/10/1999	162	2,833
7/17/1999	259	3,092
7/24/1999	201	3,293
7/31/1999	285	3,578
8/7/1999	185	3,763
8/14/1999	224	3,987
8/21/1999	208	4,195
8/28/1999	184	4,379
9/5/1999	196	4,575
9/11/1999	144	4,719
9/18/1999	152	4,871
9/25/1999	245	5,116
10/3/1999	202	5,318
10/10/1999	182	5,500
10/16/1999	163	5,663
10/23/1999		
10/30/1999		
11/6/1999		
11/13/1999		
11/20/1999		
11/27/1999		
12/4/1999		
12/11/1999		
12/18/1999		
12/25/1999		
1/2/2000		
TOTALS	5,653	

Appendix D

Designing and Planning a Comprehensive Investigation of Enlisted Attrition Across the First-Term Life Cycle

Data Analysis Plan

by

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The Lewin Group

Introduction

Why an Analysis Plan?

Informed policy decisions by the Army require a comprehensive statistical analysis of first-term attrition and retention that is built on a solid theoretical foundation. A solid analysis plan helps ensure a systematic evaluation of the data using structurally sound and complete models and appropriate modeling techniques. A thorough evaluation increases the likelihood that the research will provide accurate and policy relevant information regarding the causes of attrition. In addition, the analysis plan may identify data issues that will help guide the ongoing data collection efforts.

This analysis plan follows the scientific approach to modeling that relies on the following three concepts:

1. The development of a conceptual model, based on theory and our knowledge of the attrition process, to identify particular hypotheses to be tested;

2. The identification of an appropriate functional form and regression technique to estimate the attrition model(s); and

3. The identification of appropriate statistical tests to evaluate the model and its components, and to test hypotheses regarding the attrition process.

Research Questions

There are four main areas of research that ARI's attrition studies are designed to answer.

- What are the causes of attrition?

- What preventive or remedial practices can be implemented to reduce attrition?

- Do official reasons for attrition consistently agree with self-reported reasons?

- Does the quality of soldiers who separate differ from the quality of soldiers who remain?

Causes Of Attrition

Identifying the causes of attrition will be useful for both screening potential recruits and for understanding how Army policies and the structure of the enlistment contract affect attrition. The following five research questions can be analyzed:

1) What covariates predict attrition?

2) Is it useful to distinguish between "voluntary" attrition and "involuntary" attrition? If so, do the factors explaining each differ?

3) What covariates could be used for screening potential recruits at higher risk of attrition?

4) Does the relationship between attrition and its covariates vary by phase in the enlistment cycle (e.g., during training: BCT/OSUT/AIT, after training)?

5) What policies or interventions can be developed to reduce attrition?

Preventive Practices

A causal model of attrition is necessary to understand the attrition process and to identify preventive or remedial practices that can reduce attrition. For example, if inaccurate expectations of Army life cause increases in attrition, then the Army could implement policies to better inform potential recruits about military life. The following research questions can be analyzed:

1) Is a recruit's perception of military life a significant predictor of voluntary attrition? What implications does this have for better preparing or screening recruits? What are the implications for recruiters, whose incentive is to downplay the rigors of the military lifestyle? Do dependents of current or former military personnel have more accurate perceptions of military life, and are these individuals less likely to separate prematurely?

2) Are there early warning signs that can be detected at the reception station or during BCT/OSUT/AIT that a soldier is at higher risk of attrition later in his or her enlistment?

3) Can changes in enlistment contracts and compensation (e.g., length of enlistment, bonuses, penalties, pay) affect voluntary attrition?

Official Reasons For Attrition

Another area of research is whether self-reported reasons for premature separation agree with official causes as captured in the Interservice Separation Code (ISC). Soldiers fail to complete their initial enlistment for many reasons, and often there are multiple, compounding reasons. Work by Klein, Hawes-Dawson, and Martin (1991) find little relationship between the ISC assigned to a recruit and the actual reason(s) for the recruit's separation. Accurately identifying the reason for separation is vital to formulate policies to reduce attrition.

Quality of Soldiers

A final area of research is whether the quality of soldiers who separate prematurely differs from that of soldiers who remain. Quality can be defined using different measures—such as ability, performance, and the possession of specific skills.

Organization Of This Appendix

In the remainder of this appendix we address the major analytical issues that affect the design of the attrition study and we present the data analysis plan. Sections 2 through 4 contain a general discussion of the issues involving the analysis framework, data and methods, while Section 5 contains an explicit, concise analysis plan drawing from the more general discussion in the previous sections.

In Section 2 we present a conceptual model of the attrition process that can be used to identify the causes of attrition. In Section 3 we review the data collection process, discuss the strengths and weaknesses of the data, and discuss additional data issues. In Section 4 we describe analytical methods to estimate the attrition model and discuss possible model specifications. Finally, in Section 5 we present the analysis plan.

Conceptual Framework

Attrition is a complex phenomenon. The failure to complete one's first-term enlistment is often the product of multiple factors, many of which are unobservable to the researcher and thus difficult to model. In this section we provide background information on the attrition process, we define attrition, we present the theory that underlies the attrition process, and we discuss testable hypotheses that are derived from the causal (i.e., theoretical) model. This, we believe, will help motivate the proposed analyses and provide a framework for conducting the analyses.

The Contractual Agreement

When a soldier enlists in the Army, he or she enters a contractual relationship and agrees to serve in the military for a specified length of time, usually for three or four years. Presumably, both the Army and the recruit enter the agreement based on their respective expectations of the costs and benefits of the terms of the agreement.

The recruit enters the contract to receive the benefits of the employment—including compensation, training, and other benefits the Army offers, as well as the intangible benefits of service. His or her cost of enlistment is the foregone opportunities (or "opportunity cost") from remaining a civilian. These foregone opportunities include compensation and training available from a civilian job, and the less restrictive "civilian" lifestyle.

The Army also considers costs and benefits of enlistment. The benefits to the Army of an enlistment are the services received, while the costs include compensation paid to the soldier, training costs, and other incurred costs.

Both parties enter the agreement with imperfect information. Although the Army spends considerable resources to find and screen recruits, it does not know with certainty whether the recruit will complete his or her enlistment or whether the soldier's performance will be satisfactory. The recruit has expectations of Army life—including the costs and benefits of enlistment—as well as expectations regarding the opportunity cost of enlistment that may be imperfect. In addition, future events unknown to both the recruit and the Army could affect the likelihood of attrition (e.g., family hardships).

Both the soldier and the Army implicitly agree to reevaluate the contractual agreement at the end of the first-term enlistment. Soldiers who perform satisfactorily are generally given the opportunity to reenlist. However, either party can terminate the enlistment agreement prior to its completion under certain conditions. For example, the Army can terminate the enlistment if the soldier does not, or cannot, perform the services required because of medical or psychological disabilities, inability to perform, antisocial behavior, etc. The soldier can receive a discharge, which terminates the enlistment contract, if an unexpected "hardship" arises. In addition, the

soldier can "cause" the Army to discharge him or her by failing to perform satisfactorily or by engaging in antisocial behavior.

Defining Enlisted Attrition

We find it useful to construct two working definitions of attrition to better model the attrition process. The main distinction between the two definitions is whether the separation occurs as a result of the soldier's decision or actions, or whether the separation is due to circumstances largely beyond the soldier's control. The first definition, which we refer to as "voluntary" attrition, includes separations that are the result of the soldier's actions (e.g., the decision to leave, poor performance or unacceptable behavior). The second definition, which we refer to as "involuntary" attrition, includes separations that are not the result of choice (e.g., death, and medical and psychological disability). While most reasons for separation can be classified unambiguously as either voluntary attrition or involuntary attrition, the classification is not straightforward, and may be arbitrary, in many cases. [1]

The main reason for distinguishing between voluntary and involuntary attrition is that we wish to build a causal model of the attrition process that can accurately capture the relationship between attrition and its covariates. Previous research has shown that the relationship between covariates and attrition differ by reason for separation (see, for example, Klein and Martin, 1991).

Voluntary attrition may be the outcome of a rational choice by soldiers to leave prior to contract expiration, or the result of the soldier's unsatisfactory performance or behavior (which itself may be the outcome of choice). By categorizing separations due to unsatisfactory performance or behavior as voluntary separations, we "internalize" the Army's role in the enlistee's decision process.

Individuals are assumed to make rational decisions to leave before completing a contractually obligated term of service based upon an assessment of the net benefits (or "utility") of remaining in the military relative to the expected net benefits of leaving prior to contract completion. "Voluntary" is used in the sense that the soldier, of his or her own volition, chooses a course of action which results in attrition, and that this outcome is anticipated or assigned an unbiased probability estimate prior to undertaking the action. [2]

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[1] Many studies are interested solely in identifying covariates to predict the gross rate of attrition (e.g., Barnes et al., 1993) and thus do not distinguish between voluntary and involuntary attrition. Other studies do distinguish between the reason for separating. For example, Klein and Martin (1991) separately model overall attrition, attrition for medical reasons only, and attrition for "adverse" reasons. Murray (1998), in his study of attrition among Naval flight officer, distinguishes between attrition for 1) performance failure, 2) medical reasons, and 3) all other separations.

[2] A hypothetical example may help to clarify this point. Consider a soldier who enters into an enlistment contract with a bona fide intention to complete the obligated term of service. Unexpectedly, the soldier's parents become incapacitated, leaving younger siblings without adult supervision. The soldier applies for a "hardship" discharge, and leaves the Army. This type of attrition is classified, unambiguously, as voluntary. The unanticipated event raises the cost of remaining, but it was a voluntary decision by the soldier to leave. Similarly, while it is recognized that some soldiers possess more innate talent than others, most soldiers could meet the minimum

The Attrition Model

A theoretical model of the attrition process based on individual choice and expectations is necessary to provide the basis for Army policies to stem attrition, but such a model may have little ability to predict separations due to circumstances beyond the soldier's control. On the other hand, an attrition model that is designed to identify predictors of "involuntary" attrition for screening purposes may not be adequate for assessing the impact of Army policies on the soldier's choice to complete an initial enlistment. Thus, joint modeling of voluntary and involuntary attrition potentially obfuscates the estimated relationships. We propose that two models be estimated—one based on the theory of individual choice (to model voluntary attrition), and one based on identifying covariates that predict attrition, whether voluntary (choice) or involuntary. A major focus of this analysis plan is to discuss the approach that will be used to model the voluntary attrition process.

Voluntary Attrition

We can model voluntary attrition using a random utility model similar to that formulated by Hogan (1979). This model highlights the roles of expected utility from remaining in the military versus leaving, the enlistment contract length, and the "cost" of breaking the enlistment contract.

Suppose that U_t^R denotes a soldier's dollar value of utility of remaining in the military at time t, and U_t^A denotes the dollar-equivalent utility in period t from leaving. Thus, the net utility of remaining at time t is given by:

$$(U^R - U^A)_t = \beta'X_t + \varepsilon_t, \tag{1}$$

where X is a matrix of covariates, β is a vector of parameters that describe the relationship between the covariates and the net utility of remaining, and ε is a random error term.

Let C_t be the cost at time t of breaking the enlistment contract. The cost of breaking the enlistment contract could include the negative utility associated with a bad discharge, or the difficulties of securing an early separation. Then, at time t', an individual will break the enlistment contract if:

$$\sum_{t=t'}^{T}(\beta'X_t + \varepsilon_t)/(1+j)^{t-t'} < C_t, \tag{2}$$

where T is the expiration of the contract.

Note the implications of the model. If $\beta'X<0$ then the soldier has an incentive to break the contract because the utility of remaining is lower then the utility of separating. Also, the longer the soldier must endure a negative $\beta'X$—the greater the remaining term of service—the

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performance standards of the military services with sufficient effort. Therefore, attrition due to marginal performance is considered voluntary, though some may challenge this conclusion.

more likely that soldier is to separate. Policies that raise the cost to the soldier of separating, that is, that increase C_t, will reduce attrition.

We do not directly observe the net utility of remaining in the service, nor do we directly observe the cost to the soldier of separating. However, we do observe--by the soldier's choice to remain or leave--when the cost of remaining outweighs the cost of leaving.

Thus,

$$
\begin{aligned}
P_t &= \mathrm{Pr}\,ob(Separating_t) \\
&= \mathrm{Pr}\,ob(\sum_{t=t'}^{T}(\beta'X_t + \varepsilon_t)/(1+j)^{t-t'} < C \mid X_t) \\
&= \mathrm{Pr}\,ob(\sum_{t=t'}^{T}(\beta'X_t + \varepsilon_t)/(1+j)^{t-t'} - C < 0 \mid X_t) \\
&= \mathrm{Pr}\,ob(\tilde{\alpha} + \tilde{\beta}'X + \tilde{\varepsilon} - C < 0 \mid X_t).
\end{aligned}
\tag{3}
$$

We show in Section 4 how this model can be estimated using conventional probability modeling techniques such as estimating logit and probit models, and survival analysis which models both the occurrence and timing of events.

By building a model of the attrition process we can observe how variation in the covariates across soldiers and over time is related to the decision to separate prior to contract completion. Factors that cause the soldier's utility of remaining and utility of leaving to change are assumed to be a function of the soldier's observable characteristics (X), the soldier's unobservable characteristics (Z), the terms of the enlistment contract and benefits (B), and various economic or environmental factors (E)—including satisfaction with military life. Mathematically,

$$
\left(U^R - U^A\right)_{it} = f(X_{it}, Z_{it}, B_{it}, E_{it}),
\tag{4}
$$

where the subscripts "i" and "t" refer to the ith soldier at time period t. Factors affecting C_i, the cost of breaking an enlistment contract, may include Army policies and individual characteristics.

Theory provides some guidance on the likely direction of the relationship between attrition and its covariates, but the magnitude of the relationships must be determined empirically.

Involuntary Attrition

Involuntary attrition can be modeled as a function of soldier characteristics that are hypothesized to predict separations due to medical or psychological conditions—such as pre-enlistment medical and psychological conditions. There is no formal theoretical model to explain involuntary attrition because such attrition is not a function of human behavior.

Hypotheses Derived From The Model

We can derive testable hypotheses from the causal model described above that provide insight as to the likely effects of Army policies and other external factors on attrition. Factors that increase the utility of remaining in the military may decrease the likelihood of attrition. Likewise, factors that increase the utility of "civilian" life may increase the likelihood of attrition. Unfortunately, data limitations may prevent the testing of some hypotheses that are of interest to the Army.

This study may provide limited ability to empirically test several hypotheses regarding the relationship between the terms of the enlistment contract and attrition. The following are examples of hypotheses that can be tested.

- Longer contract length increases attrition.

- An increase in military pay, relative to civilian pay, reduces attrition.

- Improved quality of military life factors (e.g., satisfaction with housing and reduced PERSTEMPO) will reduce attrition.

- Benefits that are vested only after completing a specified period of service reduce attrition. Examples of these benefits include supplemental education benefits and bonuses.

Estimating the correct relationship between contract length and attrition may be difficult for several reasons. Recruits with a higher preference for military life will likely select longer first term enlistments than will soldiers that are closer to the margin at the enlistment decision point. Also, the size of any enlistment bonus is specific to particular Military Occupational Specialties (MOSs). Therefore, it may be difficult to distinguish between an MOS effect on attrition and the effect of completion bonuses without including other cohorts in the analysis.[3]

A large body of literature on reenlistments describes the theory underlying factors that contribute to soldiers' decision to remain in the military. Analyses that model the reenlistment decision usually define the soldier's net benefit of remaining in the military in terms of discounted expected future earnings from remaining in the military versus leaving the military. Therefore, an increase in military pay relative to civilian pay raises the net utility of remaining in the military and presumably increases the likelihood of contract completion.

The research may provide information on the hypothesis that policies that raise the cost to the soldier of breaching an enlistment contract will reduce attrition. However, to estimate the effect of changes in Army policies on attrition there must be sufficient variation in policies over time to allow one to observe attrition behavior with a policy present and attrition behavior in the absence of the policy. This generally requires analyzing the attrition behavior of more than one

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[3] Hogan, Smith and Sylwester (1991) model the effect of the Army College Fund on attrition and reenlistment; however, they find that supplemental education benefits have only a small effect on contract completion. Currently, the Army does not offer completion bonuses. Rather, it offers enlistment bonuses that are paid over time after soldiers successfully complete certain milestones in their enlistment.

cohort data. However, survey data collected as part of the current study covers only one cohort who entered the military during a relatively short time frame.

Testing hypothesized relationships derived from the theoretical model is often difficult because many of the underlying factors that are hypothesized to affect attrition are unobservable to the researcher (e.g., motivation and ability). Some of these factors may be correlated with observable soldier characteristics (e.g., high school graduate and AFQT score), which provides some basis for estimating the causal relationships.

Some of the limitations of testing these hypotheses are minimized by the current research design. One contribution of this research to our knowledge of the attrition process is how some previously unobserved characteristics—such as values, expectations, and level of commitment— affect attrition. Note that the simple attrition model exposited earlier relies on the soldiers' expectations of future Army life, as well as current conditions. The survey data collected for this study will allow one to test hypotheses about previously unobserved soldier characteristics. These hypotheses include more accurate expectations at enlistment will reduce attrition, and certain forms of advertising are more likely to identify recruits who will successfully complete their contract.

Testing specific hypotheses is also complicated by the fact that there are often multiple, compounding factors that affect the decision to separate. Klein, Dawson and Martin find that most recruits who leave prior to completing the first 35 months of their enlistment do so for a combination of two or more reasons. The most common reasons for early separation are work/duty problems, training problems, minor offenses, and mental health problems. Often these problems are interrelated and confounded by problems with drug and alcohol abuse or a negative attitude.

Data

ARI's attrition research program includes a major data collection effort that began in January 1999 and will continue through February 2003. The type of data collected and the nature of the data influence both the specification of the attrition model and the analytic approach used to estimate the model. In this section we give a brief review of the data collection process, discuss the strengths and weaknesses of the data, and discuss specific aspects of the data that have implications for the analysis.

The Data Collection Process

One of the important characteristics of the data is that they are longitudinal. Soldiers will be surveyed at different points in their military career over their initial term of service, and these survey data will be merged with data in the soldiers' personnel records (using their Social Security number) to provide detailed information regarding the soldiers' characteristics and circumstances throughout the first-term enlistment.

The data collection efforts began with a survey administered to all new soldiers at six posts with reception battalions (Forts Benning, Jackson, Knox, Leonard Wood, McClellan, and Sill). With few exceptions, all soldiers entering BCT/OSUT between 8 January 1999 and 31 August 1999 were surveyed to collect information on the circumstances of their enlistment in the

Army; to collect background information on their demographic characteristics, education, marital and dependents status; and to collect information on their expectations of military life. Efforts were made to administer the survey to all recruits in the reception battalion. However, some soldiers—e.g., those on special assignments or on sick call—did not receive the survey. The survey administered to the new recruits is referred to as the Soldier Reception Survey. These soldiers are referred to as the FY99 cohort.

All soldiers receive an End of Training Survey upon completion of BCT, OSUT, and AIT. This survey collects information designed to measure the soldiers' satisfaction with the training experience, satisfaction with military life, and level of motivation. The survey also asks questions from the Reception Survey regarding the soldier's personal characteristics—such as race, sex, marital status, and so forth. There are two reasons for collecting personal characteristics on this second survey: First, some of the characteristics (e.g., marital status) may have changed since the previous survey.[4] Second, important demographic information is collected for soldiers who, for whatever reason, did not receive the Reception survey.[5] The surveys will be administered at five posts with AIT courses (Aberdeen Proving Ground and Forts Lee, Eustis, Gordon, and Sam Houston). Soldiers in the FY99 cohort who do not attend AIT at one of these five posts (approximately 10 percent of the FY99 cohort) will not receive the survey.

Members of the FY99 cohort who separate from the Army during BCT, OSUT or AIT are given the Army Training Exit Survey. Members of the FY99 cohort who separate from the Army after completing their basic and advanced training but before completion of their enlistment contract will be given the Army Unit Exit Survey.

Current designs call for mail surveys to be sent to a sample of the FY99 cohort in February 2000, 2001, 2002, and 2003. The contents of these surveys have yet to be determined.

The final source of data on the FY99 cohort comes from the soldiers' personnel records. Possible sources of data and the relevant information contained in each source are described in Section 5.1.

In addition to data collected from the FY99 cohort, there will be two "concurrent" data collections, both based on the Sample Survey of Military Personnel (SSMP). One purpose of collecting data on individuals outside the FY99 cohort is to determine how representative the FY99 cohort is of the population of soldiers in their first-term enlistment.

Strengths and Weaknesses of the Data

The study's data will provide a wealth of information to study the attrition phenomenon. Unfortunately, this wealth of information will be collected through surveys of one small cohort.

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[4] For many soldier circumstances we do not observe the exact timing of the change in circumstances (e.g., a chance in marital status), if any, but we may observe that the change in circumstances is bounded by two survey dates.

[5] Some of the demographic information collected in the surveys duplicates information contained in the Enlisted Master File (EMF) maintained by The Defense Manpower Data Center (DMDC).

Below we list the major strengths and weaknesses of the data and discuss the implications for the proposed analyses.

Strengths

- **Recruit perspectives.** One of the main strengths of this study over other data used in analyses of attrition is the collection of data on the recruits' expectations, reasons for enlistment, commitment, and feedback on the training process. These data will provide information on the relationship between attrition and these previously unobservable factors.

- **Information on reason for separation.** Another strength of the data is that the soldiers' reason for early separation will be collected through exit surveys. This will allow for a comparison of the soldiers' stated reason for separation to the official reason as documented in the soldiers' personnel records and as obtained through the Active Duty Loss File (ADLF).

- **Longitudinal data.** The longitudinal nature of the data offers several advantages to the researcher. First, because the cohort is followed from the date of entry into the military to the date of separation/contract completion/censoring, the enlistment status and characteristics of each soldier are known at any given point in time through the four years of the study. Second, one can observe changes in a soldier's characteristics and use this information to analyze the effect of the change on the dependent variable (separation). This allows one to construct and test more complicated models of behavior than is possible with a cross-sectional data set.

Limitations

The major limitations of these data are that they only follow a single cohort. Most studies of attrition in the past have relied on data in the soldiers' personnel records as recorded in the ADLF and the EMF. These records provide researchers access to multiple cohorts extending back many years. Although these records will be available for this analysis, the records do not contain the wealth of information that is being collected through the surveys. The implications of collecting data on only one cohort include the difficulty in determining the effect of state dependency and economic/environmental factors on attrition. These issues are discussed in more detail below.

- **Length of data collection process.** Because a cohort is being followed throughout the entire enlistment lifecycle, it will be four years before the analysis sample is complete. Although analyses can be completed prior to completion of the data collection process, the final status of each soldier will not be known for several years so there will be many "censored" observations in the preliminary analyses.

- **Potential problem of seasonal effects.** Another limitation of the analysis sample (i.e., the FY99 cohort) is that it only includes new recruits whose enlistment began between January and August of 1999. These new entrants could be systematically different from recruits who enter training later in the year. Most recruits who enter during the summer are recent high school graduates or have just completed a year of school. Recruits who enter during non-summer months may have more pre-

enlistment work experience than summer enlistments, although it is unknown a priori how this might affect attrition. Presumably recruits with civilian workforce experience will have more complete information on their employment prospects in the civilian sector than will recruits with less workforce experience. The delay in enlisting for those who enlist during non-summer months could also indicate that the recruit has less "taste" for military life. As discussed above, during the four year data collection process there will be two "concurrent" data collections, both based on the Sample Survey of Military Personnel (SSMP). One purpose of collecting data on individuals outside the FY99 cohort is to determine how representative the FY99 cohort is of the population of soldiers in their first-term enlistment. The FY99 cohort can also be compared to other cohorts using the soldier demographic information in the EMF.

Additional Data Issues

Because of the nature of the attrition process and the data collection process, several data complications arise—namely: missing data, censoring, and unobserved heterogeneity. These complications are present in most studies of attrition. A brief review of the issues provides a framework for discussing the strengths and weakness of the analytical methods discussed in the next section.

Missing Data

Data on the analysis cohort may be missing for several reasons: 1) a particular measure of a soldier characteristic may be unobservable to the researcher; 2), a soldier may not complete all the questions in the survey; and 3) a soldier may not participate in one of the many surveys that will be administered.

The first reason for missing data can complicate the analysis in several ways. If the unobserved characteristic is an important factor in the attrition process and is also correlated with other covariates in the model, then the estimated relationship between the model's covariates and attrition may be biased (i.e., omitted variable bias). If the missing characteristic is correlated with attrition and not correlated with the other covariates, then this unobserved heterogeneity may bias the baseline hazard rates (as discussed later).

Preliminary analysis of the data will reveal whether soldiers are completing all key questions on the surveys. If there appear to be problems with particular survey questions, then adjustments can be made to future surveys.

A more perplexing problem is how to treat soldiers in the cohort who do not participate in a survey. Reasons why soldiers might not participate in a particular survey include: 1) the soldier may not have been present when a survey was administered to a reception or training battalion[6]; 2) the soldier may attend AIT at an installation where the End of Training Survey is

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[6] Preliminary analyses show that approximately 30% of soldiers did not participate in the reception survey. The likely reason is that the soldiers were assigned to special duties and thus were not present when the survey was administered to the reception battalions.

not administered; or 3) the soldier may not be selected to participate in the mail surveys (or may choose not to respond to the surveys) that will be sent periodically to a sample of the cohort.

Part of the data analysis should include an examination of the data to determine the number of soldiers for whom there are "complete" data, and the number who participated in only a fraction of the surveys. Also, the characteristics of new recruits can be obtained from the EMF and the soldiers who do not participate in the survey can be compared to the characteristics of the soldiers who do participate. If attrition is uncorrelated with survey participation, and there is no reason to suspect that they are correlated, then one can exclude non-participants from some analyses that rely on the survey questions.

Censoring

Observations are "censored" when the final outcome of interest is unobserved. There are three sources of censoring relevant to this analysis. First, some soldiers will separate for non-voluntary reasons (e.g., death, medical or psychological disability). Thus, for these individuals we do not observe whether they would have completed their contract or voluntarily separated in the absence of an involuntary separation.

Second, we observe the FY99 cohort for a maximum of four years. Consequently, soldiers with contracts longer than four years who do not separate within the first four years will be censored.

Third, when survival analysis is used to model attrition, recruits who complete their enlistment may be treated as censored observations (Hawes, 1990). Survival analysis is the study of failure times (or separation times in the study of attrition), and soldiers who complete their enlistment do not, by definition, separate prematurely.

Consider the four cases depicted in Figure D-1. In case (1) the soldier completes the enlistment contract at the end of the fourth year, and thus for the survival analysis the time of separation is censored at the time of contract completion. In case (2) the soldier's first term contract is for more than four years. Consequently, the observation is censored at the end of the fourth year if the soldier is still enlisted at the end of the fourth year of service. In case (3), the soldier fails to complete the enlistment contract because of death or medical problems. Thus, in the study of voluntary attrition the observation is censored at the time of death or separation. In case (4) the soldier fails to complete the enlistment contract by choice.

In some of the proposed analyses the censored observations should be excluded from the analysis; in other analyses the censored observations should be included. One benefit of including censored observations in the analysis is that they still provide important information, even though the final outcome of the soldier is unknown. Namely, the censored observations provide information that the soldier did not voluntarily attrit up to the time of censoring. If one were simply to discard those observations where censoring occurs, the result would be to bias low the estimated rates of retention. Several of the proposed analyses that we discuss directly address censoring, while others do not.
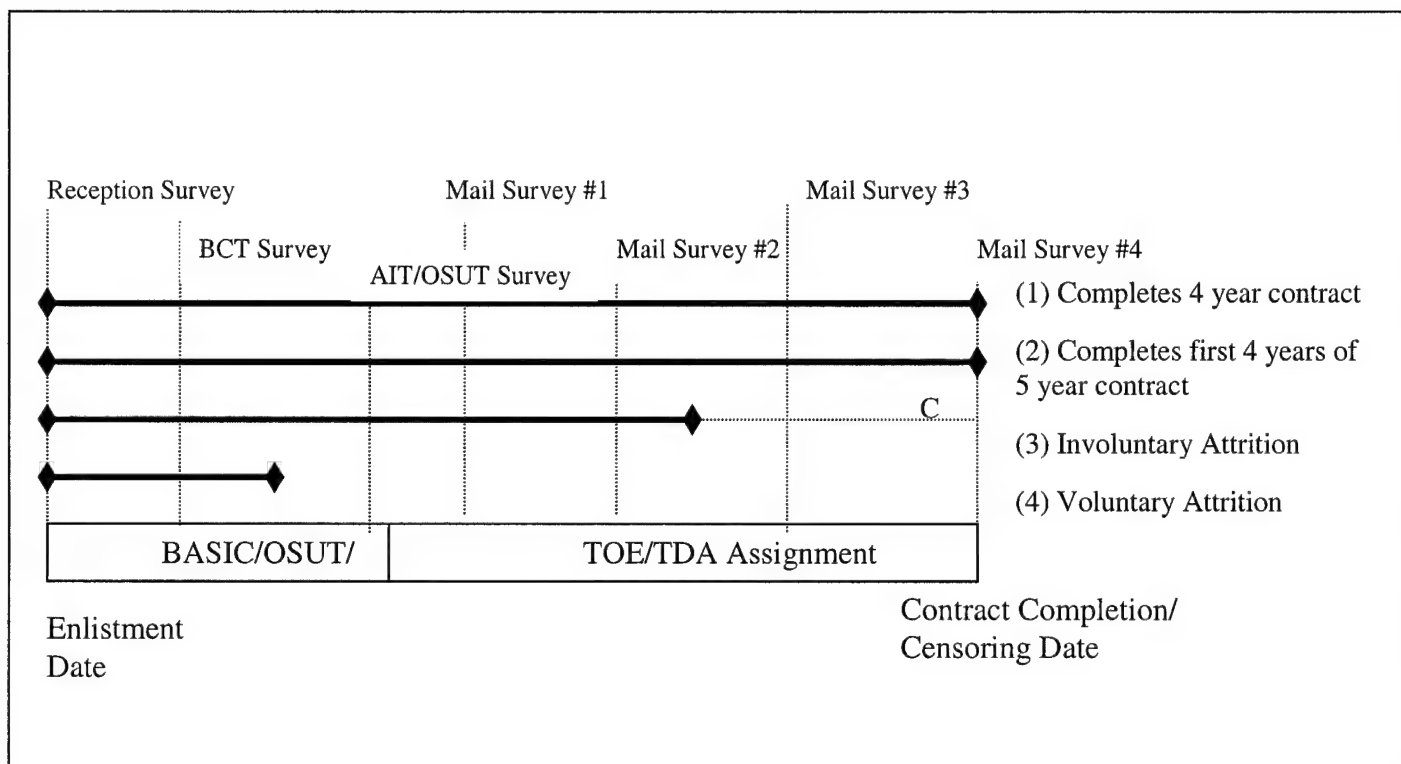
Figure D-1. Censoring and The Data Collection Process

Unobserved Heterogeneity Versus State Dependency

One shortcoming of any analysis that models the complex attrition process is that no set of measured covariates can capture all of the variation across individuals and over time in factors that affect attrition. Individuals differ in many ways, and not all these differences will be captured in the model. Unobserved heterogeneity is the name given in the economics literature to the unobserved, individual-specific factors affecting behavior. If unobserved differences affect attrition, it may be difficult to discern whether attrition rates change over time with soldier tenure or whether soldiers with higher probabilities of attrition are being selected out.

Consider the following example: Soldiers with less taste for military life are more likely to separate by choice early during their enlistment so that over time the remaining sample is increasingly made of up of soldiers with a higher taste for military life. Thus, initially the estimated hazard rate reflects the average of the hazard rates for all soldiers, but over time the hazard rate becomes more like that of the soldiers with higher taste for military life.[7]

The hazard rate is also a function of the state of events that take place during the enlistment period, and the state of events differs during basic training, advanced individual

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[7] The hazard rate is the likelihood of separation between time period t and t+1, given that separation has not occurred prior to t. The hazard rate is discussed in more detail in Section 4.

training, and the post-training environment. Military life is arguably the most restrictive during basic training, followed by advanced training, followed by the post-training environment. Consequently, soldiers are more likely to separate by choice during basic training, followed by advanced training, followed by the post-training environment. Thus, it may be difficult to determine if declining attrition hazard rates in the sample are due to unobserved heterogeneity, or due to the nature of the enlistment lifecycle itself and, in particular, the increasing attractiveness of Army life as soldiers move through and complete the training process.

One advantage of the current study over other attrition studies is the wealth of information on soldier expectations, satisfaction, and commitment at different times during the enlistment lifecycle. Thus, this study will be able to model soldier characteristics that were not observable in past studies and will likely reduce the problem of unobserved heterogeneity. A shortcoming is that it consists of, at best, only one cohort of recruits. Typically, longitudinal data on several cohorts is required to sort out unobserved heterogeneity from state dependence.

Another variant of unobserved heterogeneity and state dependence is the ability to distinguish between cohort and time effects. The only source of variation in some covariates (e.g., economic conditions) is over time. Trends in economic conditions may correspond with the natural decline in the attrition rate over the course of the first-term enlistment, thus masking the true relationship between attrition and its covariates.

Non-random Assignment

Both the Army and the recruit are involved in decisions regarding the length of the enlistment contract, the MOS the soldier will enter, and other forms of compensation such as bonuses and post-enlistment educational benefits. This non-random assignment complicates the attrition study because factors associated with the likelihood of attrition (e.g., being a high school graduate and soldier preferences) may affect both the assignment of soldiers to a particular MOS and the likelihood of premature separation.

For example, if recruits at higher risk of attrition (e.g., non-high school graduates) are more likely to be assigned to an MOS with lower training costs, then the model may attribute some of the attrition causality to the MOS covariate that should have been attributed to the enlistee's characteristics (e.g., in this example not having a diploma). The extent to which the current recruitment and assignment process takes into account risk of attrition may bias the estimated relationship between attrition and its covariates.

To determine whether non-random assignment to an MOS may be a problem, one can determine whether covariates that predict attrition are also correlated with the choice of MOS.

Methods

Several statistical methods have been used in previous studies to estimate causal and predictive models of attrition. The most appropriate method for a particular analysis depends on the nature of the data and on the policy questions that the study addresses. Over time, attrition models and the statistical methods to estimate these models have become more complex (and presumably more accurate) as new statistical methods and software have been developed.

Methods that have been proposed or used in past research range from simple comparisons of raw attrition rates from different subgroups of the population of soldiers, to complex multivariate models designed to predict both the occurrence and timing of attrition. Although the more sophisticated approaches, and in particular survival models that utilize panel data, are more adept at modeling the complex relationships that affect the attrition process, such models are more difficult to estimate and have more stringent data requirements.

Several of the analytical methods we discuss in this section take advantage of the longitudinal nature of the data—that is, the temporal and cross-sectional variation in the cohort—to estimate the relationship between attrition and its covariates. Other methods mentioned take advantage of only the cross-sectional variation within a cohort. Preliminary analyses of the data will rely mainly on the cross-sectional nature of the data, but temporal variation in the covariates will become an increasingly important attribute of the data as the data collection effort progresses.

In this section we provide a brief review of the methods used in previous attrition studies, and we discuss how these methods—individual versus grouped analysis, the modeling of discrete outcomes, and survival analysis—apply to thisresearch. In addition, we discuss possible covariates to include in the model specification.

Individual Versus Grouped Analysis

Analyses may use the recruit as the unit of observation, or may use a category of recruits (e.g., a category defined by MOS, by cohort, etc.) as the unit of analysis. When grouped data are used, the variable of interest is the rate of attrition. When individual level data are used the variable of interest is if and when a recruit separates.

Using the individual as the unit of analysis has two advantages over grouped data. First, it is much more efficient to estimate the multivariate models that are discussed below using individual level data because the estimation techniques take advantage of variation in the covariates to help establish the relationship between attrition and its covariates. When individual level data are aggregated into groups, then the statistical estimation technique can use only cross-group variation in the covariates to estimate the relationship between attrition and its covariates. Within-group variation in the covariates is lost in the aggregation. Thus, by aggregating there can be a significant loss of information.

Second, decisions to separate prematurely are soldier-level decisions—not group decisions. The decision to voluntarily separate prematurely is a direct result of the soldier's decision to separate, or is a consequence of the soldier's actions or performance. Thus, by modeling separation using individual level data one is modeling the process at the level where decisions are made.

Modeling Discrete Outcomes

Whether or not a soldier completes his or her first-term enlistment is a discrete outcome that can be modeled with a dichotomous variable. The conventional approach to model discrete outcomes as a function of covariates is to estimate a probability model using the maximum

likelihood estimation technique. The most popular multivariate probability models are the logit model (logistic regression) and the probit model.

Prior to the early 1980s, estimating logit and probit models was the main analytic approach used to model attrition. Today, various survival analysis methods (which are described later) have become increasing attractive alternatives to logit and probit models as the field of survival analysis has become more developed and as commercial statistical software packages have incorporated survival analysis techniques. Below we give a brief description of these models and discuss their use for modeling attrition.

Logistic Regression

Logistic regression can be used to model whether or not a soldier separates during a specified period of time. The estimated logit model assigns a probability of attrition to each soldier based on the soldiers' characteristics and circumstances as captured by the covariates in the model.

Grissmer and Kirby (1985) use logistic regression to model the attrition of enlistees in the Army Reserves and National Guard who have no prior military service. Grissmer and Kirby estimate models for three time periods: separation during initial training, separation between the end of initial training but within two years of enlistment, and separation during the first two years of enlistment. The authors estimate separate models for men and women, stating that preliminary evidence showed important differences in the relationships between attrition and its covariates for men and women.

Etcho (1996) uses logistic regression to analyze attrition from the Marine Corps. Buddin (1988) uses logistic regression to gain insight into why improvements in the proportion of recruits who were "high quality" had little impact on reducing attrition. Barnes et al. (1993) use logistic regression to identify education credentials that are good predictors of attrition across the four military Services. The purpose of their analysis was to identify criteria that could be used in the recruiting process to screen out potential recruits who were at higher risk of attrition. Kleinman and Zuhoski (1980) use logistic regression to estimate the effect of pay and other determinants on Navy pilot attrition.

The logit form equation to predict attrition (A) as a function of covariates (X) and parameters (β) is expressed:

$$P(A=1|X) = \frac{1}{1+e^{-(\beta_0 + \sum_k \beta_k x_k)}}, \text{ where}$$

$$A_{it} = 0, \text{ if individual i stayed through time period t and}$$
$$1, \text{ if individual i separated during time period t.}$$

Probit Models

Probit models saw widespread use in many of the earlier empirical studies of attrition (see for example Lockman, 1977; Trost, 1978; and Warner, 1978; Lurie, 1979). In more recent years, Hogan, Smith , and Sylwester (1991) estimate a probit model to determine the effect of

educational benefits from the Army College Fund on attrition and reenlistment, and numerous studies have used a probit model to estimate the probability of reenlistment.

Probit models are similar to logit models, but place different assumptions on the distribution of the error terms. The probit model is less common in the literature than the logit model, presumably because the estimated coefficients from the logit model are easier to manipulate and interpret.

The probit form equation to predict attrition (A) as a function of covariates (X) and parameters (β) is expressed:

$$P(A = 1 \mid X) = \int_{X\beta}^{\infty} d\phi(x), \text{ where}$$

$$A_{it} = 0, \text{ if individual i stayed through time period t and}$$
$$1, \text{ if individual i separated during time period t;}$$

and ϕ is the unit normal distribution function, and is the standard deviation of the error term.

The probit model, like the logit model, can be used to estimate the probability that an event will occur—such as a premature separation—during a specified period of time. Past research has shown that the probability of attrition during a fixed unit of time differs over the enlistment contract. As discussed previously, this non-constant probability of attrition during the enlistment contract is a function of the changing situation and characteristics of the soldier during different stages of the enlistment contract, as well as unobserved heterogeneity.

As an alternative to estimating a single set of parameters to model the probability of premature separation over a long interval of time, one can divide the enlistment period into N smaller intervals. One could estimate separate probit models (or logit models) for each of the smaller intervals with soldiers included in each probit equation conditional on surviving to the observation time. The main purpose of this approach is to produce more accurate point estimates of the likelihood of premature separations, and to determine whether the relationship between the covariates and attrition changes over time. Lurie estimates 48 probit models to determine the probability of attrition during each month of a four-year enlistment. The outcome of his analysis was 48 point estimates that more closely reflects the likelihood of separation at each month in the first-term enlistment.

A natural extension of the probit model (or logit) is to allow for multiple equations with correlated disturbances. The decision to separate or remain each month may be thought of as a sequential decision, where the decision for each month is conditional on the choice the proceeding month—if a soldier has already separated then no future decisions are required. This type of model, known as a "panel probit" model or a "sequential probit" model, can help control for unobserved heterogeneity.

Modeling The Timing of Discrete Outcomes (Survival Analysis)

Survival analysis is a class of statistical methods used to analyze the occurrence and timing of events.[8] This class of statistical methods has evolved largely from biomedical research, but has become increasingly common in the social sciences. Unlike the probit or logit models, survival models provide estimates of conditional probabilities. For example, in survival analysis probabilities are estimated for individuals in period t, assuming that they survived to period t-1. In contrast, probit and logit models provide unconditional probability estimates.

Lurie analyzes first-term attrition of Navy recruits provides some of the first empirical work using survival models to attrition.[9] He uses cross-sectional, rather than longitudinal data. Lurie compares the Cox regression procedure to the probit and logit analyses. Hawes estimates a survival model to study first term attrition from the Marine Corps. Blakemore (1992) and Rubiano (1993) both use survival analysis to study enlisted attrition from the U.S. Coast Guard.

There are many methods of survival analysis: life tables, Kaplan-Meier estimators, exponential regression, log-normal regression, proportional hazard regression, competing risks models, and discrete-time methods, to name a few (Allison, 1996). The focus of this section is the proportional hazards regression and variations of the model.

In survival analysis, the key variable of interest is the length of time a soldier remains in the Army until separating. For ease of discussion, we refer to the length of time between enlistment and separation, censoring, or contract completion as a "spell." Each spell is represented by a number T, which has a distribution over time (t) and is a function of the hypothesized or observed covariates that affect T.

Suppose that T has a continuous probability distribution f(t) where t is the realization of T. The cumulative probability (for a given soldier) of attriting is:

$$F(t) = \int_{s=0}^{t} f(s)ds = \Pr ob(T \leq t)$$

The probability that a spell is at least t in length is given by the survivor function:

$$S(t) = 1 - F(t) = \text{Prob}(T \mu t).$$

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[8] Other names for survival analysis include "event history analysis," "duration analysis" and "transition analysis."

[9] One purpose of Lurie's paper is to explore how the empirical findings from survival analysis compare to those obtained using a probit model. The data Lurie uses in his analysis is a cross-section of first-term Navy recruits, from different cohorts, who Lurie observes for one year. Lurie estimates separate probit models for each month of the first-term (i.e., 48 monthly intervals) and includes in the regression only those individuals who were present at the beginning of the first term. Lurie compares the 48 point estimates from the probit models to the estimates from the survival model and finds similar results. However, as expected the probit exercise requires vastly more computer computational and researcher time than does the survival model.

Given that the soldier has not separated at time t, we are interested in the probability of separating during the next time period (Δ). This can be expressed mathematically as:

$$A(t,\Delta)=Prob(t \leq T \leq t+\Delta | T \mu t).$$

The likelihood of separating during Δ, as Δ becomes infinitely small, is the instantaneous rate of attrition, which is called the hazard rate. The hazard rate can be expressed in terms of the probability distribution and the survival function:

$$h(t) = \frac{f(t)}{S(t)},$$

which generally is preferable to model than either the probability distribution or the survival function. To model attrition using survival analysis, one could specify a likely distribution of T and covariates that affect T. Three distributions of T that are common in survival analysis are the exponential, Gompertz, and Weibull distributions. The hazard rates for these distributions are shown in Figures D-2 through D-4.

The models that use these distributions are known as the exponential, Gompertz, and Weibull models, respectively, and are members of the general class known as proportional hazards models. The exponential model assumes that the hazard is constant over time—i.e., $h_i(t)=\lambda_0$, while the Gompertz and Weibull allow for the hazard to vary with time. When T follows a Gompertz or a Weibull distribution the hazard functions are expressed, respectively, $h(t)=\exp(\mu+\alpha t)$ and $h(t)=\exp(\mu+\alpha \log t)$.

We can extend the three models to allow for the influence of covariates (X) such that the hazard functions are specified:

Exponential: $h(t)=\exp(\mu+\beta_1 X_1+\beta_2 X_2+...+\beta_k X_k)$,

Gompertz: $h(t)=\exp(\mu+\alpha t+\beta_1 X_1+\beta_2 X_2+...+\beta_k X_k)$, and

Weibull: $h(t)=\exp(\mu+ \alpha \log t+\beta_1 X_1+\beta_2 X_2+...+\beta_k X_k)$.

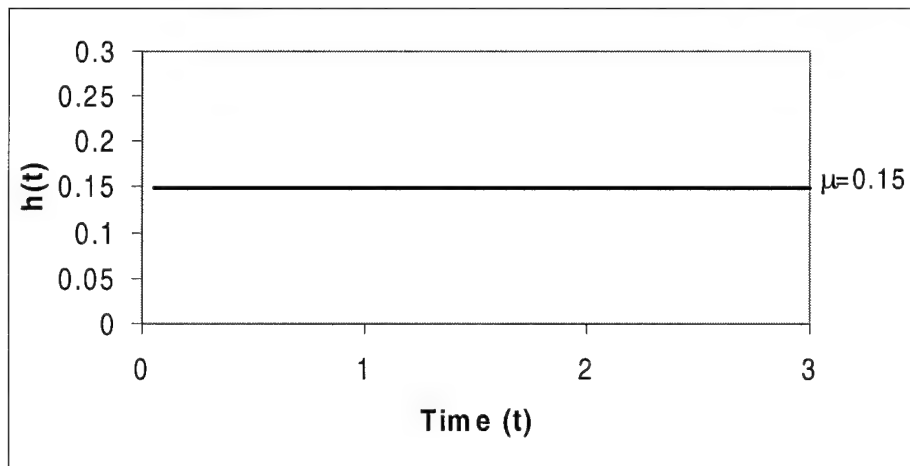**Figure D-2. Hazard Rate for the Exponential Distribution**

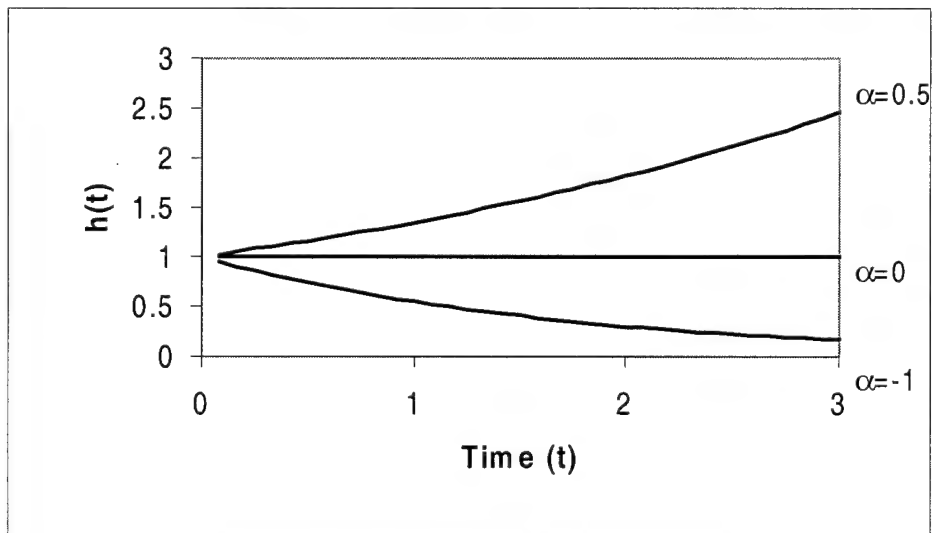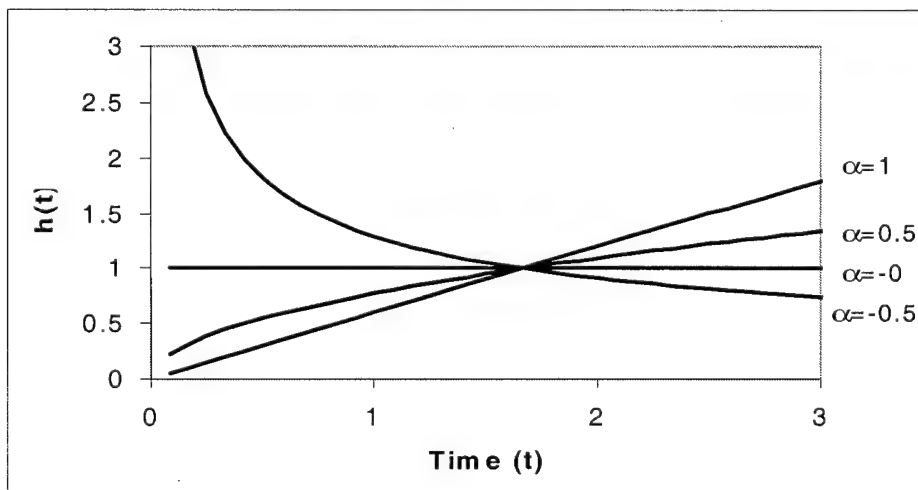**Figure D-3. Hazard Rate for the Gompertz Distribution**

Figure D-4. Hazard Rate for the Weibull Distribution

For each soldier, the covariates may be fixed over the length of the spell (e.g., race and whether the soldier was a high school graduate at enlistment), or may vary over time (e.g., age and marital status).

In his 1972 paper, Cox proposed a model, now known as the proportional hazards model, which eliminates the need to specify a particular distribution of the occurrence of events and allows for time-varying covariates. Cox reasons that since the baseline hazard (i.e., the hazard rate when all covariates have a value of zero) for any two individuals is the same, the hazard rate for the ith individual is a fixed proportion of the hazard rate for the jth individual. That is, the ratio of the hazard functions of any two individuals is constant over time and varies only as a function of the covariates:

$$\frac{h_i(t)}{h_j(t)} = \exp\{\beta_1(x_{i1} - x_{j1}) + ... + \beta_k(x_{ik} - x_{jk})\}$$

Cox also proposed a method to estimate the proportional hazards model in his paper—a technique now referred to as "partial likelihood' or "maximum partial likelihood." The Cox regression, which refers to both the proportional hazards model and the estimation method, has been used in previous studies to model the attrition process.

When the current study's data are analyzed using survival analysis, these models (i.e., the exponential, Gompertz, Weibull models and the Cox regression) should be estimated to determine if one form of the model provides more accurate estimates of the attrition process.

Comparing Modeling Approaches

The logistic regression and probit analysis are very similar, so the main distinction in the analytic methods discussed above is how survival analysis differs from the use of logistic regression and probit analysis.

Survival analysis has several advantages over the estimation of logit and probit models.

1. Survival analysis has the ability to accommodate censored observations. When one estimates a logit or probit model of voluntary attrition, one needs to determine what to do with soldiers who involuntary separate (e.g., because of death). For example, one can code involuntary separations as separations, as non-separations, or one can omit the observations from the analysis. Categorizing censored observations as separations or as non-separations may result in an inaccurate prediction of the soldiers' enlistment status had the observation not been censored. On the other hand, omitting censored observations from the analysis is inefficient because the time at which the observation is censored provides information on the attrition process. Soldiers who are censored shortly before time t are much more likely to have stayed through time t than are soldiers with a longer gap between the time of censor and time t. One possibility is to let the timing of the involuntary separation determine whether the observation should be coded as a non-separation or excluded from the analysis.

2. Survival analysis produces estimates of attrition at each point in time, while logit and probit models produce interval estimates. However, as discussed above, one can

estimate a series of probit or logit models to produce point estimates of the probability of separation over time.

3. Survival analysis provides information on the timing of events.

4. Survival analysis "smoothes" the attrition events over time.

Model Specification

Soldiers have an incentive to leave prior to contract expiration when the utility of leaving is greater than the utility of remaining. Theory suggests that expected future compensation, the desires of family members, satisfaction with military lifestyle, etc., contribute to the soldier's decision to leave or remain. Many of these factors are observable to the researcher; other factors are unobservable but likely correlated with the individual's personal characteristics; and other factors are unobservable and thus cannot be modeled. Factors that potentially affect attrition (i.e., the covariates) may vary across soldiers, over time, or both.

Cross Sectional Covariates

The opportunity cost of remaining in the military varies by soldier. Some components of the opportunity cost of service (e.g., compensation in the civilian workforce) can be measured and estimated; others cannot. Although expected earnings if a soldier leaves the military are not known with certainty, empirical evidence and theory suggest that expected earnings are correlated with certain characteristics. Factors shown to be correlated with earnings include level of education, race, skills, ability, age, and workforce experience.

Laurence, Naughton and Harris (1995) review the attrition literature and discuss the known and suggested causes of first-term attrition. Below, we summarize the main factors that have been included in previous analyses of attrition. In Table D-1 we list the covariates that were included in selected attrition studies.

- **Contract length**. Hogan (1979) shows that longer contract length is positively correlated with attrition. However, estimation of the theoretical relationship between contract length and the probability of separating prior to contract completion is complicated by the likelihood that soldiers with a higher taste for military life—and thus at lower risk of attrition—may be more likely to choose contracts of greater length.

- **Education (as measured by years completed, diploma, and GED)**. Many studies have found that having a high school diploma is the best single predictor of completing the first-term enlistment. However, the reason why high school graduates are less likely than non-graduates to attrit is unclear.[10]

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[10] Plausible explanations are that ability and personal skills that contribute to a successful graduation are the same factors that contribute to the successful completion of one's enlistment contract. Consequently, a graduate degree not only represents a level of academic success, but also represents unobservable characteristics such as ability and degree of discipline. Laurence (1987) finds that attrition rates of soldiers with a GED more closely resemble attrition rates of non-high school graduates than of graduates.

- **Mental ability.** Enlistees with higher Armed Forces Qualification Test (AFQT) scores are less likely to attrit than those with lower scores (see, for example, Flyer and Elster, 1983; Laurence, 1984, 1987; Klein and Martin, 1991). In addition, AFQT has been found to be a better predictor of attrition among high school graduates and for whites versus blacks (Elster and Flyer, 1982). In this analysis, average grade in high school provides an additional proxy for mental ability (although grades are a function of both ability and effort).

- **Military occupation and skills.** Past studies have found differences in attrition rates between occupational specialties in the military (e.g., Fernandez, 1985; Finstuen and Aley, 1983; and Rosenthal and Laurence, 1988). Reasons may be that some jobs are more arduous or onerous than others. Also, in some occupations soldiers are learning skills that are more marketable in the civilian workforce.

- **Race/ethnicity.** The literature shows mixed findings on the relationship between race/ethnicity and attrition. Cooke and Quester (1988) find that relative to members of racial or ethnic minority groups, whites are more likely to be discharged for administrative reasons and less likely to be discharged for disciplinary actions. Klein and Martin (1991) find that all else being equal, white recruits are more likely than their black counterparts to separate early both for medical and adverse reasons.

- **Sex.** Various studies have found that women are more likely to attrit than men (e.g., Flyer and Elster, 1983). Compared to men, women are more likely to separate for medical reasons (often for pregnancy) and less likely to separate for disciplinary-related actions.

- **Supplemental education benefits.** Hogan, Smith and Sylwester (1991) find that supplemental educational benefits offered under the Army College Fund have a small, negative effect on attrition. However, they find that the relationship is not statistically different from zero.

Many of the studies we reviewed model the interaction of the covariates described above. For example, Klein and Martin model the interaction of race and AFQT score, and the interaction of race/ethnicity and age.

Time Varying Covariates

- **Age.** Past studies have shown that the relationship between age and attrition is not especially strong, although there is some evidence that younger soldiers are more likely than their older counterparts to separate because of behavioral problems and older soldiers are more likely than younger soldiers to separate for medical reasons.

- **Marital status and number of dependents.** Both marital status and number of dependents can vary across soldiers and over time. Past studies are fairly consistent in finding that married soldiers are more likely to attrit than single soldiers, although the relationship may be weak (Klein and Martin, 1991). This pattern holds for both male and female soldiers. Little research has been conducted to determine whether attrition is correlated with having dependents or with the number of dependents.

- **Economic conditions**. The ratio of military to civilian pay and unemployment rate are two possible covariates to control for economic conditions. Kleinman and Zuhoski (1980) estimate the effect of pay and other determinants on Navy pilot attrition. They find that pilot attrition increases as the pay of civilian pilots increases relative to military pay.

Validating the Model

A successful attrition model has two characteristics. First, the model accurately identifies the causal relationship between the covariates and whether soldiers complete their enlistment contract. Second, the model has good predictive ability to assign probabilities of contract completion.

To evaluate the model using the first criterion, one should compare the findings to those reported in the literature. In addition, one should compare the findings to those predicted by theory. For the second criterion, the predictive ability of the model can be evaluated using various statistical tests for overall goodness of fit, as well as evaluating the statistical significance of the model's components.

Table D-1. Covariates Used in Past Attrition Studies

	Lurie (1979)	Buddin (1988)	Hawes (1990)	Hogan, Smith, Sylwester (1991)	Blackmore (1992)	Barnes et al. (1993)	Rubiano (1993)	Etcho (1996)	Espiritu (1997)	Murray (1998)	First Rate Data Collection Method
					Studies						
Service Branch	Navy	Army, Navy, Airforce, Marines	Marines	Army	Coast Guard	Army, Navy, Airforce Marines	Coast Guard	Marines	Navy	Marines	
Analytic Technique	Probit, Survival analysis	Logit	Survival analysis	Probit	Survival analysis	Logit	Survival analysis	Logit	Frequency tables	Multinomial logit	
					Cross Sectional Covariates						
Education (diploma, years, major)	✓	✓	✓	✓		✓			✓	✓	Survey, personnel records
Mental group/ AFQT category	✓	✓	✓	✓		✓		✓	✓		Personnel records
Race/ethnicity	✓	✓		✓	✓		✓		✓	✓	Survey, personnel records
Delayed Entry Program		✓				✓					Survey
Service (Navy, Air Force, Army)		✓				✓					N/A
Enlistment contract characteristics: • Length of service • Bonuses • Post-service benefits				✓ ✓							Personnel records
Basic training site		✓									Records

Studies

	Lurie (1979)	Buddin (1988)	Hawes (1990)	Hogan, Smith, Sylwester (1991)	Blackmore (1992)	Barnes et al. (1993)	Rubiano (1993)	Etcho (1996)	Espiritu (1997)	Murray (1998)	First Rate Data Collection Method
Cohort		✓	✓		✓		✓		✓		N/A
Sex		✓	✓	✓	✓		✓	✓			Survey, personnel records
Moral waivers		✓									N/A
Physical characteristics (e.g., body mass)		✓									N/A
Cross Sectional and Time Varying Covariates											
Age	✓	✓		✓	✓	✓		✓			Survey, personnel records
Enlistee has primary dependents	✓										Survey, personnel records
Marital status			✓	✓	✓		✓				Survey, personnel records
MOS				✓	✓		✓				Personnel records
Pay Grade					✓		✓				Personnel records
Time Varying Covariates											
Military/civilian pay ratio											External sources
Unemployment rate											External sources

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Plan

The data analysis plan consists of creating the analysis database, modeling the attrition process to identify causes of attrition, testing hypotheses derived from the model that allow one to identify preventive or remedial practices that can be used to reduce attrition, comparing the official reasons for attrition with self-reported reasons, and determining whether the quality of soldiers who separate differs from the quality of soldiers who remain.

Creating The Analysis File

One of the first steps to creating the study's Master Analysis File (MAF) is to identify all the recruits in the FY99 cohort. This information is available from the Enlisted Master File (EMF) maintained by The Defense Manpower Data Center (DMDC). Then, using social security number as the key identifier, the EMF can be merged with the survey data collected as part of this study and with the Active Duty Loss File (ADLF).

Key data to obtain from the EMF include the following: social security number, sex, race/ethnicity, date of birth, marital status, number of dependents, pay grade, date of current rank, education level, Armed Forces Qualification Test (AFQT) percentile, duty location, primary Military Occupational Specialty (MOS), expiration of term of service (ETS) date, and basic active service date. Ideally, over the four years of the data collection effort a monthly extract of the EMF could be obtained that tracks the characteristics and circumstances of the soldier on a monthly basis over time.

Key data to obtain from the ADLF include the following: social security number, separation program designator, inter-Service separation code, and date of separation.

The survey data collected as part of this study will be merged with the MAF by social security number. The merged file will provide information on the number of soldiers in the cohort who did and did not participate in each survey, as well as basic information on the soldier with which to determine if survey participation is correlated with any soldier characteristics. The MAF will also provide a sampling frame for the four mailed surveys that will occur at the end of each of the four years in the analysis period.

Another database that can be merged with the MAF is the Army Training Reporting Record System (ATRRS), which contains information on soldier records from Basic and Advanced Individual Training. The ATRRS is maintained by a contractor— ASM Research, Inc. Previous analyses by Young (1998) have found high match rates between the ATRRS and EMF.

Other databases exist that contain data on recruits and soldiers (e.g., the Active Army Recruit Database, AARCRT; and the Operational Recruiter Master File, ORMF),

but the information in these databases largely replicates information in the databases mentioned previously.

The analysis database should undergo a through cleaning to validate the data. Specific steps include:

- Computing frequency distributions of the variables in the database to help identify miscoded values and outliers;

- Performing consistency checks on the data (e.g., verifying that factors such as sex do not change over time);

- Comparing demographic information obtained from the surveys to the information in the EMF to verify accuracy of the data and matching process.

Several of the proposed analyses will model whether soldiers separate during certain phases of the enlistment life cycle—e.g., during BCT/OSUT/AIT—while other analyses will model attrition on a continuous basis over the enlistment period. To construct an analysis database that can support the different types of analyses, the database should be a panel database with monthly snapshots of a soldier's circumstances. This would be a rectangular database with one observation per soldier per month, and would contain the most recent information on the soldier as of the beginning of each month and an indication of whether the soldier separated during the month. Such a panel database would support research to estimate point estimates of attrition rates, as well as attrition over specified intervals of time (such as during the initial basic training).[11]

Defining Attrition

As discussed in Section 2, there are conceptual reasons why multiple definitions of attrition should be used based on the reason for separation. At a minimum, attrition should be defined separately for "voluntary" separations—that are the result of choice— and "involuntary" separations that are the result of circumstances and not choice. Involuntary separations would be those related to medical and psychological disability, and death.

Construction And Estimation Of The Models

The attrition process can be modeled using a combination of the approaches discussed in Section 4. The choice of modeling approach depends on the period of enlistment that will be analyzed as well as the research questions one wishes to investigate.

A logit model can be used to analyze attrition during the different initial training phases (i.e., BCT, OSUT, and AIT) of the first-term enlistment. The purpose of this

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[11] Point estimates of attrition are estimates of the probability of attrition during a given short period of time (e.g., a month), while interval estimates of attrition are estimates of the probability of attrition during a longer period of time (e.g., during BCT, or during a specified year of enlistment).

analysis is to identify the causes of voluntary attrition and the factors that predict both voluntary and involuntary attrition. In addition, a panel probit model can be estimated that combines, for example, the model predicting completion of BCT and the model predicting completion of AIT.

Survival analysis can be used to model attrition on a continuous, monthly basis through the four-year analysis period. For this analysis many of the explanatory variables listed above would remain in the model, and additional explanatory variables would be included to reflect that the soldier enters different stages of the enlistment cycle (i.e., as the soldier transitions through the different training stages).

One possible specification for the variables to control for training in the survival analysis is to create two variables (TRAIN and BCT), where TRAIN=1 during each month that the soldier is in training (including BCT, OSUT, or AIT), and TRAIN=0 during each month that the soldier is not in training. In addition, BCT=1 for each month the soldier is in Basic Training, and BCT=0 during each month the soldier is not in Basic Training.

The dependent variable is whether the soldier leaves (L=1) during the period of interest or remains (L=0) through the period. Explanatory variables may include:

Demographic characteristics (as of the beginning of the analysis period)—

- Age,
- Sex,
- Race/ethnicity,
- Self-assessed level of fitness,
- Level of education,
- Average grade in high school,
- AFQT score or percentile,
- Marital status, and
- Number of dependents;

Contract Status—

- Length of enlistment term;

Soldier Pre-enlistment Circumstances—

- Familiarity with expectations of Army service,
- Main factors that influenced decision to join the Army,
- Participation in the Delayed Entry Program (DEP),

- Primary MOS selected,

- Received moral waiver,

- Received medical waiver,

- Perceptions of Army life relative to civilian life,

- Expectations about the amount of difficulty to find a good civilian job if had not enlisted,

- Current active duty Army career intentions, and

- Feelings about decision to enlist in the Army;

Training Site—

- Training installation (using indicator, or "dummy" variables), and

- Training length (i.e., for OSUT and AIT whose lengths may vary by MOS).

Testing Hypotheses

A main purpose of this analysis is to identify causes of attrition, and in particular, to identify causes of voluntary attrition. Once the causal models described in Sections 2 and 5.3 have been estimated, the hypotheses described in Section 1 can be tested.

For each of the modeling approaches discussed above, there are tests for statistical significance to test whether the estimates of the relationships between attrition and its covariates are statistically different from zero. The conventional test for statistical significance is the Wald Chi-Squared statistic for the logit model and proportional hazards model[12].

In addition to testing whether the coefficient on a particular covariate in the model is statistically significant, one can test whether groups of variables are statistically significant. For example, if age is included in the model as a group of dummy variables (e.g., AGE18=1 if the recruit is 18 years old, and AGE18=0 otherwise, and AGE19=1 if the recruit is 19 years old, and AGE19=0 otherwise, etc), then one can test whether the group of age variables (i.e., AGE18, AGE19, etc) is statistically different from zero. When testing whether an estimated coefficient in the model is statistically significant, one is implicitly testing whether the hypothesized relationship between that covariate and attrition is statistically significant.[13]

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[12] The Chi-Squared statistic is used to determine the statistical significance of a covariate in a probit model.

[13] For example, suppose an explanatory variable in the model is familiarity with expectations of Army service (EXPECT). Further, let EXPECT=1 if the soldier reports, at the reception battalion, that he or she is extremely familiar or very familiar with what will be expected of him or her in the Army. Let EXPECT=0 if the soldier reports moderate, little or no familiarity with what will be expected of him or her

Comparing The Official Reasons For Attrition With Self-Reported Reasons

Soldiers who separate prematurely will be surveyed to determine their reason(s) for separation. These self-reported reasons can be compared to the official reason for separation as reported by the Inter-service separation code in the ADLF.

One analysis is to prepare a cross-table that lists the official reasons for separation in rows, and the self-reported reason for separation in columns, and determines the frequency of observations in each cell. These cross-tables can be computed separately for men and women, by education level, and by other soldier characteristics to determine whether the likelihood that the official reason matches the self-reported reasons are correlated with soldier characteristics.

Reasons can also be grouped into categories, to determine if self-reported reasons are consistent with official reasons by category. Klein, Dawson, and Martin (1991, Table 9) define 10 categories of early separation that could be used.

- Mental health—phobias, suicide threats and attempts, emotional immaturity, and personality and adjustment disorders.

- Training—failure to show progress, inability to attain or maintain proficiency, lack of aptitude, refusal to follow instructions, chronic lateness or absence from training, failure to do homework.

- Work/duty—lack of motivation, disobeys orders, doesn't get along with others, disrespectful to superiors, chronically late or absent from non-training activities, and disruptive influences.

- Alcohol—failure at or refusal to participate in rehabilitation, intoxicated while on base, and DUI (driving under the influence) arrests.

- Drugs—failure at or refusal to participate in rehabilitation, positive drug test results, and possession of drugs and drug use prior to enlistment.

- Major offenses—conviction for serious military and civilian offenses, including any that resulted in an incarceration and/or court martial.

- Minor offenses—includes AWOL (absent without leave), non-DUI traffic violations, and failure to disclose prior military service.

- Homosexuality—Including failure to disclose prior to entry.

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in the Army. If we find that the relationship between EXPECT and attrition is negative and statistically significant, then this would support the hypothesis that soldiers who are familiar with what will be expected of them in the Army are less likely to separate voluntarily than are soldiers with little or no familiarity with what will be expected of them in the Army. Such information could be used to better prepare recruits for what will be expected of them in the Army, or could be used to screen potential recruits.

- Pregnancy—at time of enlistment or later.

- Physical—failure to meet physical fitness requirements.

Comparing The Quality of Soldiers Who Separate and Soldiers Who Remain

A research question posed earlier is whether soldiers who separate are different in quality than soldiers who remain. Quality can be defined in many ways, including ability to perform and actual performance. Numerous studies have shown that high school graduates are more likely to complete their contract than are non-graduates, and level of education is possibly one indicator of soldier "quality." Other measures of ability to perform that could be included in our analyses include AFQT score (or percentile) and average grade in high school (as reported on the Reception Survey). Measures of performance in training (both Basic and AIT) may be contained in the ATRRS database.

One approach to determine if soldier quality it correlated with attrition is to include measures of soldier quality in the attrition models (i.e., the logit, probit, and proportional hazards models) and determine if the estimated coefficient is statistically significant.

However, because assignment to an MOS is non-random and likely correlated with ability, the true relationship between attrition and soldier ability may be difficult to predict. That is, if high-quality soldiers are systematically channeled into particular MOSs, then the MOS effect on attrition may be capturing part of the "ability" effect on attrition.

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